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CYANOSIS OF THE NEW-BORN

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The frequency with which cyanosis of the new-born is encountered constitutes a problem which, in the past, has received too little attention from the obstetrician, general practitioner and pediatrician. It is difficult to think of any other condition in the realm of pediatrics which can be charged with so many slipshod methods of prevention, inaccuracies of diagnosis and uncertainties of prognosis. Of recent years much progress has been made in methods of treatment, but it is probable that the reputation achieved by these methods has been largely due to the fortunate fact that a large proportion of cyanosed new-born babies recover spontaneously. A correct diagnosis is arrived at with difficulty, owing to a combination of factors: the multiplicity of conditions that may produce cyanosis; the as yet meager knowledge of the physiology of respiration and circulation of the new-born baby, and the present day lack of unanimity in the interpretation of various clinical laboratory procedures used to facilitate the diagnosis.

The more commonly accepted causes of cyanosis of the new-born may be divided into those due to accidents of labor and those due to pathologic conditions of the infant.

CAUSES DUE TO ACCIDENTS OF LABOR

1. Aspiration of mucus.
2. Atelectasis.
3. Prolapsed cord or cord around the neck.
4. Early separation of the placenta and low implantations of the placenta.
5. Prolonged difficult labor.
6. Breech presentation with difficulty in delivering of aftercoming head.
7. Severe circulatory or toxic conditions of the mother, or drugs, particularly morphine, administered to the mother during labor.
8. Cerebral edema.
9. Intracranial hemorrhage (traumatic).

CAUSES DUE TO PATHOLOGIC CONDITIONS OF THE INFANT

1. Prematurity.
2. Persistent thymus.
3. Diaphragmatic hernia.
4. Tracheo-esophageal fistula.
5. Congenital cardiac malformation.
6. Tongue swallowing.
7. Pneumonia of the new-born.
8. Tetany of the new-born.
9. Sepsis of the new-born.
10. Intracranial hemorrhage (spontaneous).

COMMENT

A detailed discussion of the majority of the causes is unnecessary, since their relation to cyanosis is obvious; a few have received undue emphasis in the past, and others, in spite of their etiologic importance, have not received the consideration they deserve. It is hoped that a critical analysis, from a clinical point of view, of some of these causes will stimulate a free discussion and help to establish a greater uniformity in our conception of the etiology of cyanosis and in the diagnostic methods employed.

Some familiarity with the accepted theories relative to the physiology of the new-born baby is of the utmost value to the clinician.

During fetal life the necessary supply of oxygen for the developing fetus and the disposal of carbon dioxide are effected by simple diffusion across the placenta. The carbon dioxide tension of fetal blood is higher than maternal venous blood and the oxygen tension is less.[1] The stimulus responsible for the first respiration is not definitely known but is at present credited to an increase of carbon dioxide tension stimulating the respiratory center. If this is true, it is difficult to explain intra-uterine apnea unless one assumes that the fetal respiratory center is much less sensitive than that of the new-born baby and responds only to much higher concentrations of carbon dioxide. During labor the normal interchange of gases across the placenta is impeded and in some instances, such as premature separation or low implantation of the placenta or umbilical cord pressure, may be completely suspended. This is reflected in a much increased carbon dioxide tension in the fetal blood and a diminished oxygen concentration. That this blood picture is practically invariable in the new-born has been proved by the careful studies of Eastman. In addition, he has shown that the p_H of the serum of these infants and particularly of those with asphyxia is very much reduced. In prolonged labor the increase in carbon dioxide tension and even the anoxemia itself may stimulate the respiratory center prematurely. Proof is abundant that premature respiratory efforts do occur, as evidenced by the number of instances in which amniotic fluid has been found in the alveoli of still-born infants.[2] Even if premature respiratory efforts do not occur it is logical to assume that frequent stimulation of the respiratory center may materially depress its functional capacity. The reduction of oxygen in the fetal blood has further-

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1. Eastman, N. J.: Bull. Johns Hopkins Hosp. **50**: 39 (Jan.) 1932; **47**: 221 (Oct.) 1930.
2. Farber, Sidney, and Sweet, L. K.: Amniotic Sac Contents in the Lungs of Infants, Am. J. Dis. Child. **42**: 1372 (Dec.) 1931.

more been proved by Schmidt [3] to damage the cells of the respiratory center so that they are incapable of responding to the normal stimuli.

If, then, one accepts the fact that most new-born babies enter the world in the condition of anoxemia, with the functional activities of their respiratory centers more or less impaired, and that in addition they have normally a polycythemia (which facilitates the occurrence of cyanosis), one cannot consider as remarkable the frequency of this symptom in the new-born. Added to these factors, which may be considered more or less normal, there are numerous accidents of labor and pathologic conditions in the infant, which may be the means of producing cyanosis.

ASPIRATION OF MUCUS AND ATELECTASIS

Although aspiration of mucus and atelectasis as causes of cyanosis have been listed under different headings, they are coupled for discussion since they represent a definite cause and effect. It is conceivable that paralysis of the respiratory center may, per se, produce atelectasis, but in the great majority of instances the more simple explanation is the correct one; namely, the plugging of sections of the bronchial tree with aspirated mucus. It is one of the most common causes of cyanosis and one that lends itself readily to preventive measures, which are all too frequently ignored.

When one considers that the expansion of the alveoli in the new-born baby's lung is accomplished only after the exercise of considerable force (that represented by 14 cm. of water) and that dilatation is not complete for two or three days after birth, it is readily seen that any additional impeding factor such as mucus in the bronchial tree may oppose the relief of atelectasis. The actual cause of the cyanosis is not the shunting of blood through the collapsed area nor is it the throwing out of commission of one section of the lung by the collapse of the alveoli; it is simply the interference with the proper entrance of air into the lungs by the occlusion of bronchi or of the trachea itself, having the same effect as if one deliberately choked the infant by compression of the trachea with the fingers. The coating of the alveolar epithelium with mucus, preventing the normal interchange of gases between the capillary circulation and the alveolar air, is probably another factor.

The diagnosis of atelectasis by physical examination is a difficult one, but it has been greatly simplified by the use of the x-rays, as shown by Dunham.[4] The change in the angle of the ribs described by Wasson [5] is of great help in the proper interpretation of the x-ray film.

The prevention of cyanosis due to aspiration of mucus should not be a difficult problem. The mistakes made in the past have been:

Delay in attempting to remove the mucus until after the first inspiratory effort of the infant. It should be possible to perform this function as soon as the head is delivered.

The use of coarse gauze to wipe out the secretions. Such a procedure is apt to traumatize the child's buccal mucous membrane and also fails to remove mucus below the faucial region.

The too vigorous use of a hard rubber catheter with consequent traumatism of the pharynx by the sharp edges of the openings in the end of the rubber. It is also customary for the operator to suck up mucus into the catheter, blow it out into a basin and reinsert the tube, thereby introducing pyogenic organisms into the infant's upper air passages.

A metal suction-tip with smooth surfaces, bent to conform to the curve of the infant's mouth and pharynx, serves the purpose admirably. The suction should be continuous and of moderate force to obviate injury to soft structures such as the uvula.

CEREBRAL EDEMA

From a clinical point of view there is every reason to believe that edema of the brain is a not uncommon cause of cyanosis and one that is frequently overlooked. Unfortunately, substantiating pathologic evidence is difficult to obtain. The symptom complex of the condition can best be illustrated by a hypothetical case history:

An infant is delivered after a prolonged difficult labor, possibly with the aid of forceps. Some difficulty may be experienced in resuscitation, but thereafter the infant behaves in a normal manner for a period varying from eighteen to twenty-four hours, at which time an attack of cyanosis occurs followed by a succession of disturbing symptoms such as vomiting, refusal to nurse, twitching of extremities, and even convulsions. The fontanel is full and tense. Lumbar puncture reveals clear spinal fluid with possibly a few red blood cells discovered microscopically. These signs continue for two or three days and then diminish in intensity, until on the fourth or fifth day the infant has returned to normal.

The clinical picture strongly suggests intracranial hemorrhage, but the delay in appearance of the signs, the negative results of spinal fluid examinations and the rapid subsidence of the symptoms render this diagnosis untenable.

There is plenty of evidence to support the view that the brain receives, during even a moderately difficult labor, sufficient traumatism to produce a reactionary edema. Pressure exerted on the skull during labor results in increased intracranial tension and congestion, which is reflected in the frequency with which petechial hemorrhages are found at autopsy in the brain and meninges.[6] Excessive molding of the cranial bones and pressure by application of instruments are common causes of intracranial damage. It is a logical assumption that this damage must frequently result in cerebral concussion and edema.

INTRACRANIAL HEMORRHAGE (TRAUMATIC)

The most serious obstacle to the proper recognition of intracranial hemorrhage is the lack of a clear-cut definition. The great variability in the situation and size of the hemorrhage as found at autopsy is no doubt responsible for the confusion and looseness in the nomenclature. The diagnosis is not an easy one and it is rendered even more difficult by the confusion that exists in the interpretation of the various signs and symptoms. Some of the principal factors that help to confound the clinician are:

The variety of pathologic conditions which present similar clinical pictures.

The absolute undependability of such physical signs as the tendon reflexes, muscle tone and ocular manifestations as aids in diagnosis.

3. Schmidt, C. F.: Am. J. Physiol. **84**: 202 (Feb.) 1928.
4. Dunham, Ethel C.: Atelectasis in the New-Born, Am. J. Dis. Child. **43**: 594 (March) 1932.
5. Wasson, W. W.: A Roentgenographic Study of the Infant Chest as Seen at Birth, J. A. M. A. **83**: 1240 (Oct. 18) 1924.
6. Schwartz, P.: Ztschr. f. d. ges. Neurol. u. Psychiat. **40**: 263, 1924.

The unreliability of xanthochromic spinal fluid as a sign of previous hemorrhage.

The demonstration of microscopic blood in the spinal and cistern fluid of most normal new-born babies.[7]

The difficulty in evaluating the presence of gross blood in the lumbar puncture fluid. This blood may be the result of faulty technic or it may be due to spinal cord hemorrhage.

The realization, which is dawning on most clinicians, that, even if gross blood is found in the spinal or cistern fluid and can be proved satisfactorily to be due to intracranial hemorrhage, this pathologic state is not incompatible with perfect and complete recovery. Recent reports in the literature attest the fact that such recovery is not only possible but relatively common. Ford [8] in his monograph on cerebral birth injuries cites three such recoveries and quotes numerous instances described by other observers.

There is a great disparity in the incidence of birth injury reported in the literature—from 0.6 to 9 per cent.[9] This disparity is not surprising when one considers the different methods by which the diagnosis of birth injury was achieved. In some instances, cases of suspected brain injury have been followed up in later life and the presence or absence of physical and mental defects recorded. Positive indications were considered as proof that birth injury had occurred. These conclusions were obviously based on a false premise and must be discounted.

The following signs and symptoms should be regarded as strongly suggestive but by no means conclusive evidence of intracranial hemorrhage:

Asphyxia pallida.
Difficulty in deglutition.
Stertorous breathing.
Full and boggy fontanel.
Convulsions.
The occurrence of these symptoms after a difficult or instrumental delivery or in a premature infant.
The demonstration of gross blood in the cisternal fluid and to a lesser extent in the spinal fluid.

An accurate prognosis cannot be given for the first few days. If the hemorrhage is subtentorial, the infant usually succumbs in the first week. If it survives this period, the chance of complete recovery is not as hopeless as has been heretofore believed.

PERSISTENT THYMUS

Some years ago we published an article [10] in which attention was directed to such signs as cyanosis, choking attacks, noisy nasal breathing and attacks of syncope as evidences of thymic dysfunction. The article was prompted by the fact that during the previous two or three years there had occurred in Toronto a succession of sudden deaths in apparently normal infants. The fatalities could not be attributed to any cause other than a persistent thymus, and this pathologic condition was verified, in several instances, at autopsy. Never at any time was it felt that pressure on the trachea was the cause of the symptoms, nor was there any proof that an internal secretion of the gland was responsible. An explanation, which at that time seemed adequate, was that the hypertrophied gland produced pressure on, or traction on, certain vital mediastinal structures such as the vagus nerve.

Given an alarming symptom or a combination of symptoms suggesting thymic enlargement, a hypertrophied gland, as shown by the x-rays, no other discernible cause for the symptoms and then a rapid return to normal following roentgen therapy, it seemed a logical conclusion that the symptoms were the result of thymic enlargement. But such a conclusion, though logical, was not scientific. During the last decade the more skilful application of the x-rays has uncovered cases of atelectasis previously unrecognized, and blood chemistry determinations have paved the way for the discovery of tetany of the new-born. These two conditions account for some of the clinical pictures formerly attributed to the thymus. There are, however, many cases in which symptoms cannot be satisfactorily explained. Further investigations along physiologic and biochemical lines will, it is hoped, reduce the number of such cases. Until then, the diagnosis of thymic dysfunction as a cause of cyanosis of the new-born infant should be made with the realization that such a diagnosis has never yet been substantiated by factual proof.

The question as to whether or not irradiation of the gland is justified is one that must be decided in the individual case by the clinician himself.

TETANY OF THE NEW-BORN

Tetany is a condition which, in the last few years, has received much attention as a cause of cyanosis in the new-born infant. The clinical picture is not unlike that of intracranial injury and cerebral edema except that the symptoms may appear at any time in the first few weeks of life. The diagnosis is suggested by the following signs and symptoms: cyanosis, usually intermittent; convulsions and twitchings; hyperesthesia; hypertonicity of skeletal muscles, and Chvostek's sign. It is verified by the demonstration of low blood calcium in the infant's blood. The rapidity with which the symptoms disappear following calcium therapy supplies additional proof of the importance of the condition from an etiologic standpoint. Various explanations for the occurrence of the tetany have been advanced. It may be due to faulty diet of the mother during pregnancy. Hypoparathyroidism in the infant due possibly to trauma has been suggested. Shannon [11] attributes it to an alkalosis in the new-born. In his publications he has presented the most logical and convincing explanation that is at present available.

CONCLUSIONS

1. In the list of causes of cyanosis of the new-born, aspiration of mucus with resultant impaired ventilation should be given first place. The careful removal of pharyngeal secretions before the child's first inspiratory effort will materially reduce the incidence of cyanosis.

2. Cerebral edema is a distinct clinical entity and an important cause of cyanosis.

3. There is great need for a more clear-cut definition of the diagnosis of intracranial hemorrhage and for more uniformity in the interpretation of the various diagnostic procedures.

7. Glaser, Jerome: The Cerebrospinal Fluid of Premature Infants, Am. J. Dis. Child. **36**: 195 (Aug.) 1928. Roberts, M. H.: The Spinal Fluid in the New-Born, J. A. M. A. **85**: 500 (Aug. 15) 1925. Levinson, A.; Greengard, J., and Liivendahl, R.: Cerebrospinal Fluid in the New-Born, Am. J. Dis. Child. **32**: 208 (Aug.) 1926.

8. Ford, F. R., in Medicine Monographs, Baltimore, Williams & Wilkins, 1927, vol. 11.

9. Dunham, Ethel C.: Transactions of the American Pediatric Society, 1933. Sharpe, William, and Maclaire, A. S.: Intracranial Hemorrhage in the New-Born, J. A. M. A. **86**: 332 (Jan. 30) 1926.

10. Morgan, E. A.; Rolph, A. H., and Brown, Alan: Clinical Manifestations of an Enlarged Thymus, J. A. M. A. **88**: 703 (March 5) 1927.

11. Shannon, W. R.: Arch Pediat. **51**: 23 (Jan.) 1934.

4. The thymus gland is a possible cause of disturbances of the new-born baby, but establishment of such a relationship still awaits factual proof.

5. Tetany of the new-born is not an infrequent cause of cyanosis and one that should never be overlooked, since it responds readily to specific therapy.

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ABSTRACT OF DISCUSSION

Dr. Ethel C. Dunham, Washington, D. C.: The threshold for the appearance of cyanosis is, according to Lundsgaard and Van Slyke, an oxygen unsaturation of the capillary blood above about 6.5 volumes per cent. A number of conditions are responsible for this common symptom in the new-born. I believe that atelectasis should be considered the abnormal persistence, after birth, of a condition which is normal in fetal life and that it should be sharply differentiated from atelectasis which is the result of collapse of previously expanded lung tissue. Atelectasis of varying degrees may persist for some days or even as long as two weeks after birth without giving symptoms. This may be explained by the fact that the demands of the new-born infant for oxygen are probably not great while it is quiet or asleep. When the infant cries, however, the demand is increased and cyanosis under these circumstances may appear rather readily. At such times clinical evidences of atelectasis may be found. If the condition is one of simple atelectasis, stimulating the infant to cry at regular intervals should be efficacious, particularly if the infant is feeble and premature. The types of atelectasis least amenable to treatment are the type which is secondary to "accidents of labor" or delivery and that which is the result of incomplete development of lung tissue. The pathologic diagnosis of atelectasis is obscured by the fact that the normal anatomy of the lungs of fetuses and young infants is not wholly understood. In 1932 Hunt made a study of 118 infants less than 1 month of age who had cyanosis. He reports that, although atelectasis of some degree was present in thirty-nine, it was of a severe degree in only four cases. On this basis he considers atelectasis unimportant among the causes of cyanosis. He apparently assumes that it is possible to determine from the area of lung involved how important atelectasis is in the production of cyanosis. Hunt does not point out, however, the incidence of atelectasis in the 482 additional infants studied who gave no history of cyanosis. Another cause of cyanosis is that of narcotization by morphine administered to the mother during labor. Murphy has stated that narcotization was the commonest cause of respiratory difficulty in sixty-six infants studied. That the fetus becomes tolerant to the continued use of morphine is shown by the fact that addicts give birth to infants apparently unaffected. However, recent reports make its menace to the fetus unquestionable. These narcotized infants, of course, suffer from atelectasis. Carbon dioxide and oxygen, the Drinker respirator and injections of alpha lobeline into the umbilical vein have been advocated. It would seem rational to use a modification of the methods used at older age periods: application of heat and the giving of respiratory stimulants, as well as the administration of carbon dioxide and oxygen combined with gentle artificial respiration.

Dr. John D. Donnelly, Bala-Cynwyd, Pa.: In attempting to differentiate the causes of cyanosis an accurate antepartum delivery and immediate postpartum history is of prime importance in helping to correlate and interpret symptoms and signs elicited from inspection and physical examination. Familiarity with the so-called normal new-born infant aids in the recognition of deviations from normal. As infants are born in a state of traumatic shock—and if also cyanosed—vigorous methods of treatment designed for the purpose of establishing respiration seem to be contraindicated. For the removal of mucus from the throat, a small, smooth, woven catheter with smooth and rounded edges through which gentle suction is applied mechanically should serve. When the pharynx is cleared, the tube may be slipped past the epiglottis for further drainage if so desired, after which oxygen or a mixture of oxygen and carbon dioxide may be passed through the catheter and either followed or accompanied by placing the infant in a respirator. Any technic, such as that suggested by the authors, which may prevent the aspiration of mucus with its attendant danger of pneumonia and atelectasis is well worth a thorough trial. At the necropsy table, one is impressed with the overwhelming silent evidence of brain injury, as attested by cerebral edema and hemorrhage. In this type of case the severity of symptoms and signs in life is unreliable as an aid in immediate and remote prognosis, as some of my worst cases have survived with little or no evidence of neurologic or mental defect through the preschool age, while some with mild symptoms and signs have succumbed early or survived only to be horribly crippled mentally or physically, or both. When congenital cardiac defects have been excluded, it has been my experience that cerebral trauma and pneumonia have been the more common causes of prolonged intermittent or constant cyanosis and that pneumonia has proved to be more usually fatal.

Dr. Clifford Sweet, Oakland, Calif.: I have discovered great value in postural drainage of the trachea for children immediately after birth. The large vigorous children will do well, no matter what one does with them, provided one does not injure them. Suction is provided in the delivery room, as is a mixture of oxygen and carbon dioxide in the hospital in which I see these infants. Also, all new-born infants are placed in the head-low ventral position. The child is put into its basket immediately after it is taken from the delivery table, lying face down, with the foot of the basket well elevated, and is kept in that position while the mother is given the necessary immediate attention and until it is returned to the nursery, and at times for some little time after it is returned to the nursery. One who follows this procedure will be gratified and surprised at the amount of mucus which drains out of many of these babies in that period of time, and the number of children reported as being cyanotic will be decreased for a time after their return to the nursery. There is nothing, I think, to support the traditional idea that all babies should be turned on the right side immediately after delivery. The child's circulation will take care of itself; nor is there any ground for the objection that in lowering the child's head one increases the amount of hemorrhage if any damage has been done within the intracranial cavity. Any prolongation of cyanosis after the birth of the child is the most potent factor in increasing hemorrhage if damage is done to the brain.

Dr. Edward A. Morgan, Toronto: I think that Drs. Dunham, Brown and I are still in agreement as to how atelectasis should be classified. It is persistence of the fetal type of lung. My only point is that the mechanical condition which prevents the lung from expanding is the mucus in the bronchial tree, and that, I feel, is an accident of labor. Dr. Sweet's remark about postural drainage in the prevention of mucus getting into the respiratory passages sounds feasible. I am going to advise our obstetricians to practice it. I think that enough emphasis is not laid on the time at which the attempt should be made to remove mucus from the throat. In the last two obstetric deliveries at which I was present, one of cesarean section and the other a forceps delivery, the child after delivery was merely put aside. Everybody was so busy that there was no time to attend to the child. As I stood there (I was not supposed to be implicated in the operation at all) the child took a long, sobbing, deep first inspiration, and that was many seconds after delivery. I think that, if mucus is aspirated before this respiratory effort, a lot of grief will be saved as far as cyanosis is concerned.

Vitamin C Is Easily Destroyed.—In general it is the most easily destroyed of all the known vitamins; also it is easily soluble in water so that rejection of cooking water or the "water" of such canned vegetables as asparagus, peas or string beans may result in the loss of a large part of the vitamin C which had escaped destruction; and, furthermore, fruits are often preserved, prepared and eaten with such large amounts of added sugar that the vitamin value (and mineral content) is materially diluted and at the same time the consumption of actual fruit diminished because of the extent to which the sugar satiates the appetite.—Sherman, H. C.: Food and Health, New York, Macmillan Company, 1934.

ACTIVE IMMUNIZATION AGAINST POLIOMYELITIS

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Controlled clinical and experimental studies have shown that convalescent serum is inefficacious in the treatment of preparalytic poliomyelitis.[1] The reason for this can be seen from the pathogenesis of the disease, which indicates that poliomyelitis is an infection of the central nervous system exclusively. Evidence has been brought forth to show that the virus of poliomyelitis travels by way of the nerve tracts [2] and becomes fixed to the anterior horn cells of the spinal cord.[3] With this fact in mind, and knowing that the central nervous system is a well insulated and closed system, we believe it unlikely that serum could reach the affected cells, and, if it did, it is even more unlikely that it could dislodge the virus.[4] With the consideration that convalescent serum is of little or no value and that isolation to prevent contact infection is impracticable because of the probable high carrier rate, the best means of combating the disease appears to be in the form of a vaccine.

Since individuals who have recovered from one attack of poliomyelitis rarely if ever are subject to a second one, there appears to be some basis for the belief that active immunization can be effective in this disease. Moreover, both convalescent human beings and monkeys usually have demonstrable antibody.

We have found the antibody content higher following a severe attack as compared with that produced by a mild attack in the experimental animal, and likewise animals recovered from a severe attack show a much greater resistance to reinfection. Since there is some correlation between concentration of antibody and immunity, the former can be used as an index of immunity in immunization experiments.

Epidemiologic evidence indicates that immunity against poliomyelitis develops with aging and is probably due to exposure to the virus. Added evidence of this is brought out by a study of antibody in the serums of human beings and monkeys at different age levels. In monkeys, owing to a lack of exposure to the virus (table 1), there is no antibody at any age, but in human beings (table 2 and fig. 1) there is increased antibody with aging. Since in natural immunization some children contract the disease, a safe and effective method of artificial immunization would be preferable. For this purpose, only that vaccine which is antigenic, safe and innocuous would be of any use. This report deals with the immunization of human beings and monkeys with such a vaccine and with the tests performed to determine the degree of this immunity.

Toward this end, several methods were first developed in monkeys. The first involved the injection of subinfective doses of active virus. This was discarded because of the danger of infection. The second method, which was concerned with the use of virus serum mixtures,[5] was not practical because of the fact that in order to get an appreciable immunity the mixtures had to be just neutralized, which meant the use of many monkeys. The third and selected preparation was that of virus inactivated by germicides.[6]

Infectious monkey cord was treated with various germicides, of which solution of formaldehyde proved to be the most efficacious. Various dilutions of this germicide were mixed with the virus and the mixture was kept either in the incubator or in the icebox for different intervals, to inactivate the virus. In each case equal parts of double the required concentration of solution of formaldehyde and 20 per cent virus suspension were combined. During the course of this work it was found that the virus suspension should be just inactivated, for overtreatment or prolonged treatment with solution of formaldehyde reduced the antigenicity of the vaccine.[7] Therefore, in most of the work reported, virus inactivated by 0.1 per cent solution of formaldehyde for from eight to twelve hours at 37 C. was usually employed.

TABLE 1.—*Results of Inoculations in Monkeys*

Serum from Monkey	Age	Equivalent Age in Human Scale	Weight in Kilograms	Result
Very young.....	15-18 mos.	6-8 years	3.0	Paralysis 8 days
Very young.....	15-18 mos.	6-8 years	3.5	Paralysis 11 days
Very young.....	2 years	9-10 years	3.8	Paralysis 9 days
Very young.....	2 years	9-10 years	3.5	Paralysis 9 days
Very young.....	2 years	9-10 years	3.5	Paralysis 12 days
Prepubescent....	2½ years	11-13 years	3.8	Paralysis 9 days
Prepubescent....	2½ years	11-13 years	5.0	Paralysis 4 days
Puberty.....	3 years	14-16 years	5.0	Paralysis 8 days
Puberty.....	3 years	14-16 years	5.0	Paralysis 5 days
Puberty.....	3-4 years	15-17 years	5.0	Paralysis 8 days
Puberty.....	4-5 years	16-18 years	6.0	Paralysis 9 days
Adult.....	5-7 years	21+	8.0	Paralysis 6 days
Adult.....	10-15 years	Adult	10+	Paralysis 9 days
Adult.....	15-20 years	Adult	10+	Paralysis 17 days

TABLE 2.—*Antibody Levels in Age Groups* *

Age Group	Number Tested	No Neutralizing Antibody	Neutralized 10-50 Infective Doses	Neutralized 50-200 Infective Doses	Neutralized Over 200 Infective Doses
6-8 months.....	5	2	2	1	..
1-5 years.....	45	21	13	11	..
6-10 years.....	10	1	5	4	..
Adults.....	34	..	..	..	27

* Children, 75 per cent under 5 years show little or no antibody; adults, majority have considerable antibody.

In immunizing the experimental animal, the vaccine was administered in either one or two doses of 2.5, 5 or 10 cc. amounts. It was found that a 5 cc. dose was sufficiently antigenic so as to produce an immunity better than that developed after a mild attack of the disease and sometimes comparable with that produced by either immunization with active virus or a severe attack of poliomyelitis.

Experiments in monkeys indicated that immunity could be developed by the injection of virus treated with solution of formaldehyde and that the vaccine was noninfective (table 3). Inoculation of this material into several human volunteers having shown that it was probably safe for human administration, it was used in children.

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The vaccine was given in either one or two doses, each 5 cc. in amount, of which from 1 to 2 cc. was injected intracutaneously and the remainder subcutaneously. In more than 2,300 vaccinations there have been only three general reactions and twenty-three appreciable local reactions, such as superficial necrosis or

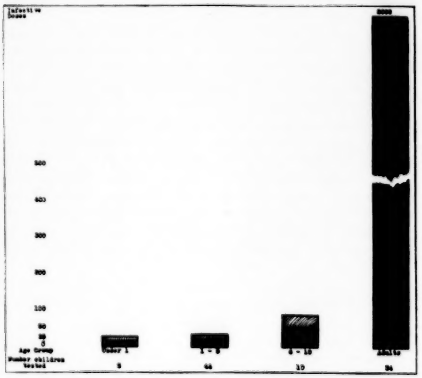

Fig. 1.—Antibody content in various age groups.

marked induration. About one third of those vaccinated showed a moderate induration, which lasted for a week or two.

About seventy-five children have been tested for antibody both before and after immunization. The results are herewith recorded so far as they have been completed. To test for antibody, the serums both before and for four weeks after the administration of the vac-

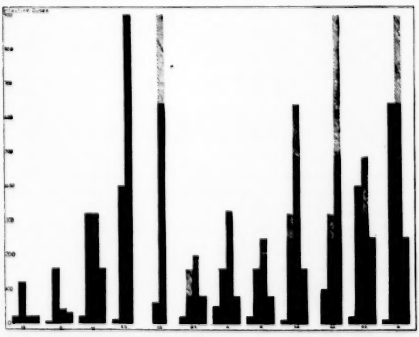

Fig. 2.—Series 1: Antibody content before immunization and one month, five months and eight months after immunization, reading from left to right. Amount is represented by vertical columns in terms of ability to neutralize different amounts of virus. The antibody level lies between the dark and the light areas.

cine were mixed with varying amounts of virus; the mixtures were incubated at 37 C. for two hours and, after standing on ice over night, were injected into monkeys, intracerebrally. If neutralization occurred, the monkey remained well. The test can be carried out quantitatively, and so, in those children in whom a slight amount of antibody was present, it was possible to determine whether or not an increase occurred after immunization.

The first twelve children, of whom five received a single 5 cc. dose and seven, two such doses, eleven days apart, were vaccinated in July 1934. They were tested before and at one month, five months and eight months after immunization. When tested from three to four weeks later, all showed an appreciable antibody response. At five months, nine of eleven retained a considerable amount of antibody, while at eight months, seven of nine still showed antibody. These results are summarized in figure 2.

A second series of seventeen children was then vaccinated, of which seven received 5 cc. amounts, four a single dose, and three two such doses, while ten were given 2.5 cc. amounts, five a single dose and five two doses. The methods of immunization and the tests carried out before and at one and five months after immunization are given in table 4, in which it can be seen that the immunity resulting from the injection of 5 cc. amounts is decidedly better than with 2.5 cc. amounts.

The results up to the present show that, with a single 5 cc. dose, antibody was produced in twenty-two of

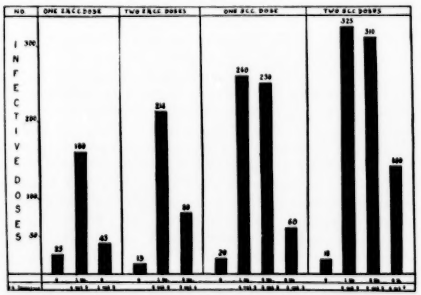

Fig. 3.—Immunization in children: Little or no antibody. Zero indicates antibody before vaccination.

TABLE 3.—*Experiments in Monkeys*

Concentration of Cord, per Cent	M. C. P.* Doses injected Intracerebrally	Time Contact Between Virus and Germicide, Hours	Results
10	6,400 + 32,000 intraperitoneally, repeated for 3 consecutive days	6	Paralysis in 10 days; prostrate 2 days later
10	6,400 + 32,000 intraperitoneally, repeated for 3 consecutive days	12	No evidence of poliomyelitis
10	6,400 + 32,000 intraperitoneally, repeated for 3 consecutive days	12	No evidence of poliomyelitis
10	6,400 + 32,000 intraperitoneally, repeated for 3 consecutive days	24	No evidence of poliomyelitis
10	3,400 + 16,000 intraperitoneally, 10 days later 3,200	24	No evidence of poliomyelitis
10	3,200 + 16,000 intraperitoneally, 10 days later 3,200	24	No evidence of poliomyelitis
10	3,200 + 4,800 intraperitoneally	24	No evidence of poliomyelitis

* Minimal completely paralyzing dose; the smallest amount of virus containing tissue that gives a complete and rapid paralysis within thirteen days after intracerebral inoculation.

twenty-six children and that with two such doses ten out of ten responded. With one dose of 2.5 cc., four out of five developed antibody and with two such doses five out of five showed an antibody response. That two doses each of 5 cc. are decidedly better than a single

dose or than 2.5 cc. amounts is indicated in figure 3, in which it is shown that the antibody is better maintained with two doses than with one or with the smaller amount of vaccine. One child, who before immunization had no antibody and who, after a single dose, showed no response, was then given a second dose, after which there was demonstrable antibody in his serum. Two children, who had received a single dose, lost their antibody at five and eight months respectively and were given a second dose. After the reinjection of the vaccine a rapid and high antibody response followed. It would seem, therefore, that two doses rather than one should be given.

The serums of the majority of the children immunized had little or no antibody before immunization, while a few had considerable neutralizing power. For the purpose of study they have been divided into three groups: those without any antibody, those with a slight amount, and those with appreciable antibody. The first of these groups also includes serums neutralizing less than ten infective doses, the second from ten to fifty and the third more than fifty infective doses. The results obtained from thirty-three children given 5 cc.

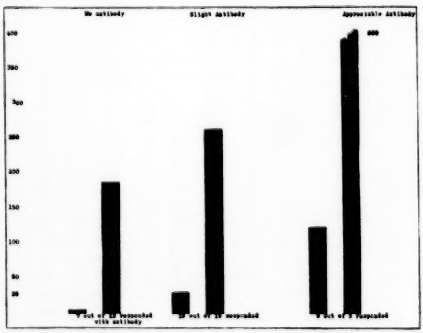

Fig. 4.—Results after various preimmunization levels. Left hand column represents preimmunization level; right hand column represents after immunization level.

amounts of vaccine are represented in figure 4, in which it is shown that although the proportion of those immunized and the height of antibody level is greater when antibody is present before vaccination, yet in the absence of any previous antibody in the small series, nine out of twelve developed antibody. All but two of these were given a single dose and since a second dose may produce antibody, it is quite likely that, judging from the small series in which one dose gave immunity to 75 per cent, two doses would produce antibody in a greater proportion. Thus the vaccine appears to elicit an antibody response in those who seem to be the most susceptible, in that they have no normal antibody.

For use in epidemics it is important that the administration should be followed by the rapid production of immunity. Three children who had small amounts of antibody before vaccination were tested at weekly intervals after receiving the vaccine. Demonstrable antibody was present in a week and reached its height in from three to four weeks. In two children, who had no antiviral substance in the control period, antibody could be demonstrated in eight days in one and in the other at sixteen days following vaccination. Figure 5 shows the composite antibody production of three children tested at weekly intervals for four weeks and then at six and eight weeks after injection of the vaccine. In the same graph is indicated the amount of antibody present at various intervals following the stage of acute paralysis in three convalescent cases. The results show that the degree of immunity developed by vaccination

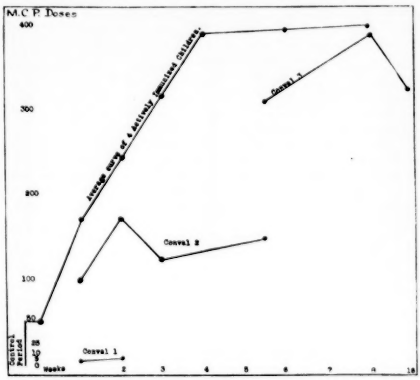

Fig. 5.—Comparison between convalescent and active immunity.

compares favorably with that present in the three children who recovered.

Were a simple test for antibody available to enable the selection of those requiring the vaccine and also to determine the results of immunization, it would be possible to limit the number of vaccinations. The only test available at the present time is the monkey neutralization test, which involves the use of several monkeys and also an interval of from two to four weeks. We were able to render mice susceptible to the virus of poliomyelitis by subjecting them to repeated x-ray exposures

Poliomyelitis — Vaccinated / Control

Hospital: Chart No.: Mother Born: Grm. born: / Grf. born:
Name:
Address: Father Born: Grm. born: / Grf. born:
Birth: Sex: Color: Religion:
Siblings — Birth / Name
Diagnosis:
Previous Immunizations: Dip.: Spx.: The.:
Date of Polio Immunization:
Wt. at Vaccination: Age at Vaccination:
Polio Family History:
Polio Exposure Prior to Vaccination:
Dosage of Polo Vaccine: Subcutaneously cc / Intradermally cc — Place of Inoculation:
Lot Number of Poliomyelitis Vaccine:
Reactions: Local: Fever: Systemic:
Antibody Content: Before Immunization: / After Immunization:
Consent: I wish to have my child . . . . . immunized against infantile paralysis.
Doctor's signature Parent's signature

Fig. 6.—Forms used in keeping records of the vaccinated control in poliomyelitis in New York and in Newark, N. J.

and to transfer the infectious agent serially to normal mice. The fact that we were transferring the virus of poliomyelitis was borne out by specific neutralization of the mouse passage virus by serums containing poliomyelitis antibody, by the production of typical poliomyelitis in monkeys who were injected with infectious mouse brains, and by the immunization of monkeys with the mouse virus. However, after a number of passages the virus is lost in mice and has to be reestablished.

Although in children the vaccine produces an antibody response which compared well with that of several convalescent children, the test of its value must rest of the disease was too low and the number vaccinated too few, as indicated in table 5, to give any definite information. Large groups of children are being

TABLE 4.—*Series 2: Immunization and Titration of Antibody Before and After*

Name	Age, Years	Weight, Lb.	First Immunization with Vaccine: Date	First Immunization with Vaccine: Amounts and Route of Inoculation, Cc.: Intracutaneous	First Immunization with Vaccine: Amounts and Route of Inoculation, Cc.: Subcutaneous	Second Immunization with Vaccine: Date	Second Immunization with Vaccine: Amounts and Route of Inoculation, Cc.: Intracutaneous	Second Immunization with Vaccine: Amounts and Route of Inoculation, Cc.: Subcutaneous	Neutralizing Power of Serum Before Immunization M. C. P. Doses	Neutralizing Power of Serum After Immunization M. C. P.	Neutralizing Power 5 Months After Immunization
Hector	1¾	18	10/17/34	1.0	4.0	10/31/34	2.0	3.0	10-20	160-240	160-240
Deveaux	5	40	10/17/34	1.5	3.5	10/31/34	...	5.0	40	800+	160-300
Viola F.	7	75	10/17/34	1.0	4.0	10/31/34	...	5.0	10-20	160-240	100-320
Calvin G.	2	24	10/17/34	1.5	3.5	.....	...	...	None	None	..
Ramus	4½	30	10/31/34	2.0	3.0	.....	...	...	240-400	640	640
Louise S.	5	40	10/17/34	1.5	3.5	.....	...	...	50-80	640-800	..
Senleon	7	31	10/17/34	2.5	2.5	.....	...	...	100	640	640-800
White	2	26	10/24/34	0.5	2.0	11/ 7/34	0.5	2.0	5-10	100-160	40-80
Dora M.	3	28	10/24/34	1.0	1.5	11/ 7/34	1.0	1.5	10-20	240-320	160-240
Lawrence A.	5	41	10/24/34	0.5	2.0	11/ 7/34	0.5	2.0	5-20	100-160	30-60
Frankie C.	5	30	10/24/34	1.0	1.5	11/ 7/34	1.0	1.5	None	40-60	None
Ann Lew R.	7	58	10/24/34	0.5	2.0	11/ 7/34	0.5	2.0	20-40	480+	..
Lugos	1¼	24	10/24/34	0.5	2.0	.....	...	...	None	4-20	..
Mildred M.	4	37	10/24/34	1.0	1.5	.....	...	...	10	100-160	Less than 80
Pellaga	6	44	10/31/34	1.25	1.25	.....	...	...	20-40	320-480	..
Alice P.	6	44	10/31/34	...	2.5	.....	...	...	None	50	..
Langford S.	5	44	10/31/34	1.25	1.25	.....	...	...	80	320	60-80

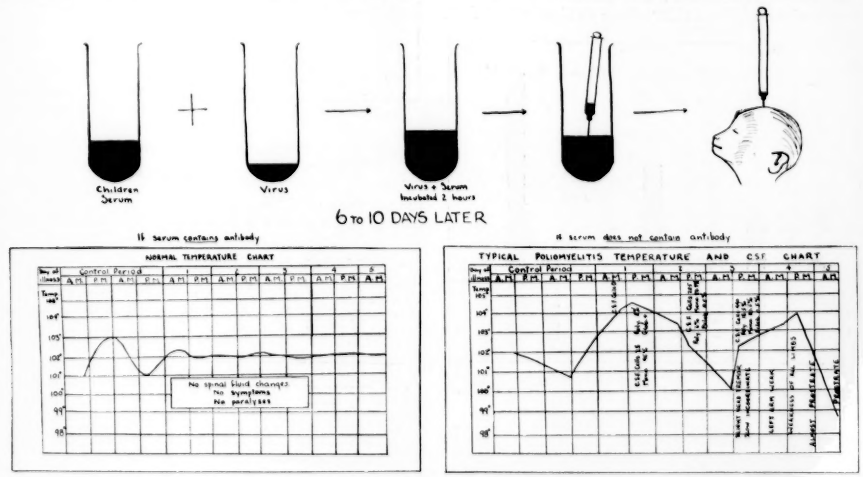

Fig. 7.—Testing children's serums for antibody response. Poliomyelitis neutralization test in the monkey.

TABLE 5.—*Immunizations in Kern County, California*

Health Officer	Dr. Joe Smith
Chief Asst. Health Officer	Dr. M. A. Gifford
1,654 Individuals Vaccinated, Nov. 1934 to May 1935	
Number who had 1 dose	110
Number who had 2 doses	1,573
Number in epidemic and endemic focus	1,184
Known exposure	128
Reactions	
Systemic	3
Local	
Necrosis	3
Induration	152
Very slight	460
Number of cases, November to May	80
12% had more than 1 case per family	
Population of epidemic focus	51,477
None of these vaccinated developed poliomyelitis.	

with epidemic studies and with a follow up of the incidence of the disease in a large number of grouped, vaccinated children. Although the vaccine was used in a small outbreak in Kern County, Calif., the incidence immunized in several centers in New York and in Newark, N. J., and are being followed (fig. 6) with controls. We hope to immunize a sufficient number to make a comparative study between the immunized and the nonimmunized.

A poliomyelitis vaccine treated with formaldehyde gives antibody production, which is apparent in about one week and reaches its full development in from three to four weeks. It has been demonstrated eight months after vaccination and by greater amounts in those receiving two doses. As far as the tests have been carried out, a single dose produces antiviral substance in more than 75 per cent and two doses in practically all.

The material appears to be perfectly safe, as demonstrated by its noninfectivity for monkeys and from more than 2,300 human immunizations.

Foot of East Fifteenth Street.

ABSTRACT OF DISCUSSION

DR. JOHN A. KOLMER, Philadelphia: Three years ago my associates and I failed to immunize monkeys with vaccines of poliomyelitis virus apparently "killed" with heat, phenol, chloroform and other chemical agents and turned our attention to immunization with living virus attenuated with sodium ricinoleate, which proved completely safe and apparently highly effective. It may be that our failure with "dead" virus was due to the administration of too small doses, but I am convinced that the living attenuated virus in small doses is a safe and effective immunizing agent. None of a large group of monkeys receiving as many as ten consecutive subcutaneous injections of the ricinoleated vaccine in doses varying from 0.05 to 1 cc. per kilogram of weight showed the slightest evidences of infection during the period of immunization and all were found to have acquired a high degree of immunity as determined by the intracerebral injection of virus. Sodium ricinoleate vaccine has now been given to more than 400 children in Philadelphia during the past year with absolutely no ill effects, and enough for the immunization of more than 2,000 individuals has been distributed. No effects other than mild local reactions at the sites of injection have occurred. The safety of the vaccine is largely due to the fact that it is prepared from remote monkey passage virus that has apparently lost infectivity for human beings, just as the smallpox virus is changed by passage through the lower animals. Additional factors of safety are the subcutaneous route of administration, the use of three small doses at weekly intervals and the rapidity of antibody production. Antibody has been found in the blood of children as early as ninety-six hours after the first dose, and during the past year we have found that monkeys can be effectively protected when the vaccine is given even during the incubation period of the disease following intracerebral injections of virus. For this reason I believe that the vaccine can be given safely during epidemics and during the incubation period. Attenuation of the virus with sodium ricinoleate may be an additional factor of safety, but the degree of attenuation is slight and of minor importance. Antibody production occurs in at least 80 to 90 per cent of vaccinated children with the doses now employed, comparable in amount to that found in the blood of individuals recovering from an attack of the disease. I too believe that this antibody will protect against the disease and we have found that it was capable of neutralizing the virus of the California epidemic.

DR. ALTON GOLDBLOOM, Montreal: It is gratifying to see the extent to which Drs. Brodie and Park have succeeded in producing a harmless inoculation capable of producing immunity against poliomyelitis on a large scale. One or two practical points have to be considered in the application of this immunization. It must be realized that it can never be either necessary or possible to immunize the entire child population of so large a country as this against poliomyelitis. It would be desirable to have some easy, rapid method of determining those children who are susceptible to poliomyelitis and to use the methods available for them. A rapid test, therefore, is essential as one of the prerequisites of this method. In some bacterial diseases susceptibility can be determined by skin tests. Those methods are scarcely available in the case of virus diseases, but perhaps some new approach to the entire subject of immunity to virus diseases may eventually develop a new index of susceptibility or immunity, and with that may come an easy, rapid method of separating susceptible from nonsusceptible subjects. In addition, it is essential to develop an easier and cheaper means of producing virus for the purpose of formalizing. At present virus is produced only through the destruction of infected monkeys. The authors have indicated the possibility of developing virus from some cheap, easily handled and easily available animal, such as the mouse. They have shown that the exposure of mice to x-rays renders them susceptible to the infection and it may be that some such method will be developed by which virus will be available on a large scale; or some method of culture of the virus itself, either by tissue methods or some other new medium, will be developed which will make the culture of viruses as simple a thing as the culture of bacteria is today. Again, this may come about, as Dr. Kolmer indicated, by the recognition of one of the many paralyzing diseases of animals as being so allied to poliomyelitis that it may in itself be antigenic against poliomyelitis in human beings, without being pathogenic.

DR. MAURICE BRODIE, New York: I agree with Dr. Kolmer when he states that decidedly larger amounts of an inactivated virus or vaccine are necessary. Of course, that has been pointed out in other diseases, in which it has been shown that inactivated virus will immunize as long as large amounts are used. With active virus one can use smaller amounts. However, we found that with the use of very small amounts of virus, such as would be safe from danger of infection, we had to give repeated doses to immunize. To get immunization with one or two doses, it was necessary to give a fairly large dose, about half to one fourth as much as of formalized vaccine. That dose was dangerous for monkeys and occasionally some came down with mild or even severe attacks of the disease. In order to get immunization with the very small and safe doses, we had to give many doses, which is not practical, and so it seemed more practical to use two larger doses of formalized vaccine. Although I think the small doses of the active virus may be perfectly safe, it has to have a very widespread use to determine that. I do not feel we can say the virus has been changed as Dr. Kolmer has stated. In rabies, for example, the rabbit virus is still under discussion as to whether the paralytic accidents of rabies immunization are due to rabies virus or not. And so, since, in rabies, immunization has been going on many years and still the question is not answered, in poliomyelitis, whether or not active virus will infect human beings can be answered only when thousands have been immunized and another susceptible animal is found. If it were possible now to infect mice, the virus could be passed through hundreds of generations and it would be seen whether or not it still infected monkeys. Dr. Goldbloom has pointed out the impracticability of the immunization except in an epidemic.

SYMPTOMS THAT PERSIST AFTER CHOLECYSTECTOMY

THEIR NATURE AND PROBABLE SIGNIFICANCE

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It is generally agreed that cholecystectomy, when performed on proper indications, is an extraordinarily successful procedure, as the follow-up studies of Mueller,[1] Whipple,[2] Maynard,[3] Stanton,[4] Dwyer and Dowling,[5] Judd,[6] Graham and Mackey [7] and others have clearly shown. Permanent good results are obtained in from 80 to 95 per cent of cases in which stones are present, and in noncalculous disease of the gallbladder comparable results are obtained when the pathologic process is advanced. As all authorities agree, patients who have lesser degrees of cholecystic disease give distinctly less favorable results. If persons have suffered from definite biliary colic, the surgical results are usually good, regardless of the pathologic condition of the gallbladder. In those cases in which symptoms are less

From the Division of Medicine, the Mayo Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

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2. Whipple, A. O.: Surgical Criteria for Cholecystectomy, Am. J. Surg. **40:** 129-131 (June) 1926.
3. Maynard, C. W.: Cholecystectomy as Seen by the Surgical Pathologist: Report of 223 Cases, Am. J. Clin. Path. **3:** 339-345 (Sept.) 1933.
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striking, and particularly in those in which the patients complain only of vague indigestion, the least satisfactory results are obtained, more or less independently of the degree of disease of the gallbladder. These facts may explain the unfavorable opinion concerning operation on the gallbladder held by certain laymen; they also lend support to the idea, recently expressed by Graham and Mackey, that the general principle of attacking disease in its early stages in order to obtain the most satisfactory therapeutic results does not necessarily hold for disease of the biliary tract.

The patient who is not cured by cholecystectomy often presents a most difficult diagnostic and therapeutic problem. What is the disease that remains to cause trouble? How can a physician select the cases in which cholecystectomy is likely to produce a good result and how can surgical intervention be avoided if patients are not likely to be benefited? These are some of the questions that perplex all physicians who have under their care patients afflicted with cholecystic disease. In general, the persistence of preoperative symptoms and the development of new symptoms may be traced to (1) erroneous diagnosis or poor selection of cases, (2) the residues of cholecystic disease, such as cholangeitis, hepatitis and pancreatitis, (3) the formation of strictures of the extrahepatic bile passages, and (4) postcholecystectomy colic, which may be attributable to a variety of organic causes and also to visceromotor disturbances, of which the so-called biliary dyskinesia is the most representative.

SELECTION OF CASES FOR CHOLECYSTECTOMY

It has just been stated that erroneous diagnosis and poor selection of cases are the most common reasons why patients are not relieved by cholecystectomy. It is necessary to consider not only the question of whether cholecystic disease is present but also whether it is responsible for all the patient's symptoms and, if it is so responsible, whether these are of sufficient severity to warrant cholecystectomy. We believe that a conservative attitude should be adopted in these matters.

The criteria for diagnosis of cholecystic disease requiring operation include: (1) a satisfactory account of one or more attacks of biliary colic or its equivalent, with or without fever, chills and jaundice; (2) residual tenderness in the region of the gallbladder following such painful episodes; (3) indigestion, which is usually characterized by flatulence, bloating and discomfort; (4) a positive cholecystogram giving evidence of a nonfunctioning gallbladder or of the presence of stones, and (5) reasonably exact exclusion of conditions that simulate cholecystitis. When such symptoms are presented by a stable, sensible individual who is not given to habitual complaining, good results almost certainly can be assured. Such conclusive evidence will not be present in every case, and not infrequently cholecystectomy will be required on less definite indications. However, the more closely these criteria are followed, the higher will be the diagnostic accuracy and the more satisfactory the therapeutic results attained.

SOURCES OF DIAGNOSTIC ERROR

The best approach to postcholecystectomy complaints is a thorough review of the preoperative history and of the indications that led to operation. Neuroses with visceral symptoms, peptic ulcer, appendicitis, pylorospasm, irritable bowel, small intestinal or renal lesions, and tabes dorsalis are prominent among the causes of indigestion closely resembling that produced by a diseased gallbladder. Such types of dyspepsia, attributable to associated lesions and erroneously diagnosed as being caused by cholecystitis, obviously will persist after cholecystectomy. Every physician of experience has known of cases in which errors have arisen from the symptomatic similarity that has just been mentioned, and there are few who have not been misled on occasions.

Colic may likewise be misinterpreted. A perforating peptic ulcer, renal calculi, hydronephrosis, and root pains of vertebral or spinal lesions may produce colic-like pain presenting difficulties in differentiation from that originating in the biliary tract. We have seen all these conditions mistaken for disease of the gallbladder or associated with it, and obviously in such cases the symptoms referable to the associated disease persist after cholecystectomy.

Not a few gallbladders are removed simply because of a history of jaundice or because of its presence at the time of examination. The reasons for this practice are obvious. From a statistical standpoint jaundice, especially if intermittent and painful, is usually attributable to inflammation or stones in the gallbladder or bile ducts. Many individuals, however, give an erroneous or misleading history of icterus, and unless observation is possible in the course of such an episode it is easy to be confused by intrahepatic or hemolytic types of jaundice. The former are characterized by absence of pain, by lack of evidence indicating obstruction of the biliary tract, and, in their active stage, by positive galactose tests. A history of persistent, mild icterus should particularly put one on guard against the presence of the hemolytic variety of jaundice. In this type of jaundice the bilirubinemia is slight and more or less persistent, and an indirect van den Bergh reaction is the rule. Since cholelithiasis occurs in from 50 to 60 per cent of cases of familial hemolytic icterus, both hemolytic and obstructive types of jaundice may occur in the same case. Familial or congenital hyperbilirubinemia and pernicious anemia are other constitutional diseases, associated with icterus, which may lead to error in diagnosis. Carotenemia, which is not so uncommon as is generally believed, must also be considered in all cases of mild, persistent, icteroid pigmentation. In other words, the presence of jaundice does not necessarily signify that its source is in the extrahepatic biliary tract or that it is amenable to surgical treatment. Errors in selection of cases for the causes mentioned in the foregoing are uncommon in our experience, the principal difficulties arising from another source.

A certain number of individuals present themselves because of indefinite dyspepsia, malaise and attacks of abdominal distress, often poorly localized and not of great severity. If such patients, by cholecystography, show evidence of disease of the gallbladder, the question at once arises as to the proper course to pursue. Because the history is inconclusive, one is often tempted to place confidence in roentgenologic evidence only. There are certain groups of patients in dealing with whom this problem arises almost as a routine, and the patient's background, habits, temperament and complaints have to be weighed carefully against the evidence afforded by cholecystography. In our experience the patients who have given the most difficulty under these conditions are (1) those presenting signs of constitutional inadequacy, with or without the mild grades of affective disorders, (2) migrainous individuals, with

or without abdominal equivalents, (3) patients with the more severe degrees of the syndromes of so-called irritable colon, and (4) those with lowered basal metabolic rates. Various grades of nervous exhaustion are frequently presented by patients of all the foregoing groups, further confusing the issue.

The most careful and astute diagnostician, using every resource at his command, is often sorely tried to arrive at a proper evaluation of the disability of individuals who make these and related complaints. Cholecystography undoubtedly has aided greatly in the diagnosis of disease of the gallbladder, and visual demonstration of calculi is confirmatory evidence in localization of the cause of the symptoms. On the other hand, roentgenologic disclosure of a poorly functioning or nonfunctioning gallbladder, if a patient presents indefinite or functional digestive symptoms, may not always be an indication for surgical measures. If the symptoms are adequate, exploration may be required, but the accidental finding of a nonfunctioning or calculous gallbladder, on routine gastro-intestinal roentgenologic examination, is little reason for undertaking operation in the absence of definite symptoms. It is important to recall that a neurotic or unstable patient who has only indefinite dyspepsia will seldom be greatly benefited by cholecystectomy, no matter what pathologic lesion is present, and that removal of a calculous gallbladder from the patient afflicted with psychoneurosis, especially if colic is not present, seldom relieves symptoms to any significant degree. If a better selection of cases could be made, particularly when patients of the sorts just considered are encountered, the percentage of favorable results after cholecystectomy would be greatly increased.

THE RESIDUES OF CHOLECYSTIC DISEASE

The residues of cholecystic disease constitute the second most common cause of persisting symptoms after cholecystectomy. Pathologic changes in the bile ducts, liver and pancreas are well recognized accompaniments of cholecystitis and cholelithiasis. The more advanced the cholecystic disease, especially if associated with stones in the common bile duct, the more prominent may be the hepatitis or pancreatitis that is encountered. The hepatic involvement, which occurs from spread of infection through the lymphatic channels or from ascending cholangeitis, may be manifested as a local lesion confined to the region of the gallbladder or, in its later stages, as an extensive lesion resembling biliary cirrhosis. In some of the latter cases there is reason to suspect that the cholecystitis may be secondary to the hepatitis. Judd has stated his belief that cholecystitis seldom exists without hepatitis and also has noted that, of a series of 1,290 patients who had disease of the gallbladder or bile ducts, 16.8 per cent had associated pancreatitis. In Judd and Mentzer's [8] series of 1,000 cases of cholesterosis, hepatic lesions were found in 27 per cent of those in which calculi were not present and in 14 per cent of those in which calculi were present. Pancreatitis was diagnosed grossly in 11 per cent of the former group of cases and in 16 per cent of the latter. In general, it can be said that a fifth of the patients who have cholecystitis have associated lesions of the liver or pancreas, or both, some of which may be sufficient to cause symptoms. It is not uncommon to find slight degrees of hyperbilirubinemia, a persistent direct van den Bergh reaction, and mild to moderate degrees of retention of bromsulphalein for weeks or months after cholecystectomy, and many patients who present these signs of hepatic involvement have definitely persistent abdominal pain and dyspepsia. What happens to these hepatic lesions after cholecystectomy? Undoubtedly many regress or become inactive; but, if the lesions are of the more severe grades, complete resolution can hardly be expected. To what extent these residues of disease in the liver and pancreas produce symptoms is difficult to determine, but they are certainly common sources of postoperative difficulty. Patients who have the most extensive hepatic lesions may have few or no symptoms after cholecystectomy, whereas others who have a minimal degree of hepatic or pancreatic involvement demonstrable at operation may have considerable symptoms after operation, including dyspepsia, at times colic, and occasionally icterus. The relation of these lesions to postcholecystectomy colic will be considered in a later paragraph.

STRICTURE OF THE COMMON BILE DUCT

Stricture of the common bile duct as a cause of complaints after cholecystectomy, which may also be classed with the residues of cholecystic disease, is fortunately rare. The mechanism by which these strictures form is imperfectly understood. They are usually regarded as traumatic or infective but may occasionally be the result of injury of the common bile duct from impacted stones. The essential pathologic change is that of obliterative cholangeitis. As Judd has pointed out, three syndromes may occur in the presence of stricture: (1) jaundice appearing shortly after operation, usually painless, with subsequent attacks of colic and further deepening of the jaundice, (2) persisting biliary fistula which, after several attempts, may finally close only to be followed by jaundice and colic, and (3) a normal course for some months after operation, interrupted by attacks of jaundice, which at times are associated by colic, chills and fever. In this last type of syndrome, the jaundice eventually becomes permanent and the biliary obstruction more or less complete. It is important to recognize that in such cases dyspepsia and colic may be present for considerable periods before actual evidence of biliary obstruction is apparent. In the presence of all the syndromes named there is a tendency to the development of ascending cholangeitis and progressive biliary cirrhosis with hepatic and splenic enlargement; in the terminal stages, hepatic insufficiency supervenes. For this reason, reconstructive operations should be undertaken before permanent hepatic damage has occurred.

POSTCHOLECYSTECTOMY COLIC

The fourth group of patients to be considered, those who present postcholecystectomy colic, represent a major problem, because of the variety of lesions that may produce the difficulty and of the uncertainty that surrounds the question of the mechanisms involved. These attacks of colic include (1) the immediate postoperative or "convalescent" colic, (2) colic referable to incomplete cholecystectomy, (3) colic attributable to stone in the common duct, hepatitis or cholangeitis, (4) colic caused by stricture, and (5) unexplained paroxysmal pain resembling colic, not referable to any gross disease of the liver or bile ducts.

In considering the mechanism of colic, it must be recalled that certain anatomic and physiologic changes

8. Judd, E. S., and Mentzer, S. H.: Cholesterosis of the Gallbladder: I. A Clinical Study, California & West. Med. **27**: 337-339 (Sept.) 1927; II. The Surgical Aspects, ibid. **27**: 487-489 (Oct.) 1927.

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occur following cholecystectomy. The chief anatomic change is dilatation of the extrahepatic bile ducts. This is probably attributable to removal of the "tension bulb" function of the gallbladder and to the fact that the resistance of the sphincter is greater than the secretory pressure of the liver. For a short time after cholecystectomy the sphincter is incompetent, but it then regains its function. There is evidence that in some cases it may actually undergo hypertrophy. The concentrating and storage function of the gallbladder is eliminated with its removal. One would suppose that subsequently there would be a continuous flow of bile into the duodenum, as very little, if any, concentrating function has been demonstrated for the common bile duct. However, there is some evidence to show that the flow of bile may at times be intermittent rather than continuous. This may be attributable to a rhythmic function of the sphincter, which at times may exhibit prolonged spasm; or the intermittence of flow, presuming it takes place, may be attributable to rhythmic secretion of bile by the liver.

Much has been written recently with regard to the nerve supply of the biliary tract and its possible relationship to symptoms referable to this region. In experimental animals, stimulation of the splanchnic nerves causes relaxation of the gallbladder and of the antral portion of the sphincter, while the papillary sphincter contracts. The effects of vagal stimulation are contraction of the gallbladder, with peristaltic activity of the antral sphincter, and relaxation of the papillary sphincter, the degree of reaction depending on the degree of stimulation. With strong stimulation, spasm of the antral sphincter is produced, in addition to active contraction of the gallbladder.

Ivy and Sandblom [9] have shown that, in some normal individuals, pain referable to the biliary tract may be produced by inducing spasm of the sphincter with pilocarpine or by stimulating the gallbladder to contract by injection of a secretin-cholecystokinin preparation when the sphincter is in a normal state of contraction. In such cases the sphincter is probably hyperkinetic. After removal of the gallbladder, hyperkinesia of the sphincter may persist, and at times it may become spastic, leading to overdistention of the bile ducts and production of pain.

The significance of these physiologic considerations in production of biliary colic is not as yet completely understood. The type of postcholecystectomy colic most easily explained on a purely physiologic basis, the simple postoperative or "convalescent" colic, occurs frequently enough so that the patient should be warned about it and told of its essentially harmless nature. As a rule, the attacks are less severe than the colic that has occurred preoperatively; then they become progressively less painful and finally clear up. Possibly such attacks are attributable to residual infection or to the passage of inspissated mucus and débris through inflamed extrahepatic bile passages; but the best explanation is referable to the motor changes occurring in the biliary tract and in the sphincteric mechanism as it is adjusting itself to the changed physiology induced by cholecystectomy.

Colic attributable to partial cholecystectomy is rare and need only be mentioned. The source of pain in these cases is exactly the same as it is in the preoperative state.

The third and most common cause of colic after cholecystectomy is the presence of stone in the common duct; incidentally, choledocholithiasis is also the most frequent cause of secondary operations on the biliary tract. Stones in the common duct may be overlooked at the original operation; they may form in the intrahepatic bile passages and eventually reach the common duct; possibly they also form in the latter structure. It has been stated repeatedly that a history of jaundice prior to cholecystectomy, and the finding of a dilated or inflamed common duct at the time of operation, indicate the need for careful exploration of the whole biliary tract. Lahey and Jordan [10] have emphasized particularly the marked reduction of the frequency of secondary operations when this plan has been followed.

The presence of stone in the common duct is especially suggested if there is prolonged drainage of bile after cholecystectomy or if further attacks of colic, fever, chills or jaundice occur immediately or later. There is one useful point in the diagnosis of stone in the common duct: after an attack of colic, examination of the serum, qualitatively and quantitatively, by the van den Bergh test, may establish the presence of latent jaundice and give a clue to the cause of the pain. It is frequently very difficult to be certain of the presence of residual stones, and only prolonged observation can establish a diagnosis; a certain number of patients may require exploration even in the absence of abnormal drainage of bile postoperatively, or in the absence of chills, fever or jaundice.

As is generally known, the symptoms of choledocholithiasis may not appear until long after cholecystectomy. Occasionally a case is encountered in which stones again form in the common or hepatic ducts, even after choledocholithotomy and drainage of the duct.

After the common causes of biliary colic have been eliminated, there remains a certain number of cases in which a stone cannot be demonstrated. In some of these the symptoms are apparently attributable to residual pancreatitis, cholangeitis, hepatitis or biliary cirrhosis. In the two first mentioned conditions, colic can be explained on the basis of intermittent obstruction of the common duct, with increasing pressure and distention above the point of obstruction.

Parenchymal hepatic diseases, for reasons as yet unknown, occasionally give rise to attacks resembling colic, but in the majority of these cases the hepatic disease is usually well advanced and gives little difficulty in diagnosis. Pancreatitis also may cause attacks resembling colic, but, as a rule, they are more gradual in onset and longer in duration. Cholangeitis of varying degrees is a frequent accompaniment of inflammatory cholecystic disease, and at secondary operations a certain amount of thickening, injection or edema of the common duct may be the only finding. At times this seems to be an obliterating process; again, the duct may contain a certain amount of purulent bile, indicating the presence of a suppurative process. More often, however, the changes found in the common duct are rather meager, and the diagnosis of cholangeitis is doubtful. However, cholangeitis is still considered the probable cause of the majority of attacks of postcholecystectomy colic, when stone in the common duct and pancreatitis are absent.

What can be said of the patient who has persistent biliary colic and indigestion, in examination and further

9. Ivy, A. C., and Sandblom, P.: Biliary Dyskinesia, Ann. Int. Med. 8: 115-122 (Aug.) 1934.

10. Lahey, F. H., and Jordan, Sara M.: Management of Biliary Tract Disease, Tr. Am. Gastro-Enterol. A., 1930, pp. 54-58.

consideration of whom none of the aforementioned causes can be demonstrated? Here one must revert to a physiologic explanation and assume that some disturbance of innervation of the duct, with spasm of the sphincter and transient "physiologic" obstruction, occurs. These cases constitute a formidable and, as yet, unsolved problem in diagnosis and treatment. In some cases, these attacks of colic appear to be associated with gastro-intestinal crises of indeterminate origin. The theory of biliary dyskinesia, as advanced by Westphal [11] and by Ivy and his collaborators, appears to explain the matter in part. These investigators have emphasized the unity of the biliary tract and duodenum, and Westphal has noted that stasis in the upper part of the intestinal tract may be associated with spasm of the mechanism of the sphincter. The innervation of the duct system has been outlined in an earlier paragraph. On this basis it seems that some abnormality of the sympathetic or parasympathetic innervation may produce spasm of the sphincter of Oddi of sufficient degree to produce overdistention of the common duct and to give rise to pain. That such overdistention can cause digestive symptoms, particularly nausea and vomiting, is shown by the experiments of Zollinger.[12] Pribram [13] has shown that prolonged spasm of the sphincter may occur in certain cases; he has expressed the belief that this spasm may be increased after removal of the gallbladder. Walters and Thiessen [14] have also demonstrated recently, by roentgenographic studies after injection of an innocuous opaque medium into the bile ducts, that some physiologic obstruction may occur at the sphincter and that reflux into the pancreatic duct may occur. They wrote also of possible "sphincteritis."

The clinical aspects of these cases in which symptoms of unknown cause persist deserve brief mention. The sufferers are almost exclusively women, frequently of neurotic tendencies, who have recurring attacks of pain of varying severity and duration in the epigastrium or in the right upper quadrant. These are identical with, or they closely resemble, biliary colic attributable to stone; the pain may begin and cease suddenly or gradually, and right subscapular extension of the pain may occur, but chills, fever, jaundice or leukocytosis are usually absent. As a rule, opiates are necessary, although in an occasional case the pain may be milder than usual and of relatively short duration. Nausea and vomiting, presumably secondary to reflex mechanisms involving the stomach and upper part of the intestinal tract, may be pronounced features and may be very exhausting. Residual tenderness is not, as a rule, present after an attack, but in certain cases it may be pronounced and associated with marked cutaneous hyperesthesia.

In certain of these cases which we have observed, features of functional disease and affective disorders were very prominent, making diagnosis and evaluation of therapy uncertain.

In reviewing the earlier histories of some of these individuals who have persistent, unexplained trouble, it is apparent that the original indications for operation were not particularly definite, and it seems that, in some of the cases at least, a "biliary dyskinesia" was originally present, which was only aggravated by removal of the gallbladder. Many competent observers believe that these motor disturbances are important in the production of symptoms and that these symptoms are in part amenable to medical measures. Newman's [15] recent report stated the problem clearly; this report deserves careful consideration.

The treatment of such cases is a most difficult problem and one that must be individualized. The severity of symptoms usually calls for surgical intervention.

Three patients recently observed were women who had undergone cholecystectomy because of indeterminate attacks of abdominal pain; the gallbladder of one contained stones, that of another was the site of extensive cholesterosis, and that of the third gave little evidence of abnormality. Acute pain and severe nausea and vomiting were characteristic features of the postcholecystectomy syndrome. In all cases, results of physical and laboratory examinations did not vary from normal, except that in one case a direct van den Bergh reaction was obtained on various occasions. Paravertebral nerve block with procaine apparently relieved the pain temporarily in two cases, and splanchnic nerve block gave prompt temporary relief in another. This seems to give a clue to the possible nervous mechanism involved, but to date section of splanchnic nerves has not been employed in a sufficient number of cases to warrant any conclusions as to its value. In one case, not of the three just mentioned, the results of section of splanchnic nerves were satisfactory; in another, the procedure has produced little benefit to date. The best results have, as Judd [16] has noted, been obtained by prolonged drainage of the common duct by a T-tube, which, of course, provides for permanent "decompression" while the tube is in situ. Transplantation of the common duct elsewhere into the bowel, in order to remove the influence of the sphincter, has been suggested. A few patients get along fairly satisfactorily with dietary regulation and medical measures. Courses of transduodenal biliary drainage, or administration of antispasmodic drugs, sedatives, alkalis, cholagogues such as bile salts, or a small dose of sodium phosphate, in the morning, may be helpful. The analgesic effect of roentgen therapy over the lower thoracic region has been tried, but in our hands the results have not been encouraging.

SUMMARY

The results of cholecystectomy for well defined cholecystic disease are, as a rule, highly satisfactory. The physician cannot expect 100 per cent curative results from cholecystectomy alone when other visceral disease, systemic disorders and neuroses are present. Erroneous diagnoses and imperfect selection of cases are responsible for a majority of the cases in which postoperative symptoms appear. At operation an exacting technic and thorough examination of the common duct, liver and pancreas are essential. Recurring postoperative colic offers the greatest difficulty in diagnosis and treatment. This is most frequently attributable to stone in the common duct and to residual infection in ducts,

11. Westphal, Karl: Muskelfunction, Nervensystem und Pathologie der Gallenwege: I. Untersuchungen über den Schmerzanfall der Gallenwege und seine ausstrahlenden Reflexe; II. Experimentelle Untersuchungen über die nervose Beeinflussung der Bewegungsvorgänge der Gallenwege; III. Die Motilitätsneurose der Gallenwege und ihre Beziehungen zu deren Pathologie, zur Stauung, Entzündung, Steinbildung, usw., Ztschr. f. klin. Med. **96**: 22-150, 1923.

12. Zollinger, Robert: Observations Following Distention of the Gallbladder and Common Duct in Man, Proc. Soc. Exper. Biol. & Med. **30**: 1260-1261 (June) 1932-1933.

13. Pribram, B. O.: New Methods in Gallstone Surgery, Surg., Gynec. & Obst. **60**: 55-64 (Jan.) 1935.

14. Walters, Waltman, and Thiessen, N. W.: Visual Methods of Studying the Physiology of the Common Bile Duct: I. The Problem of Pancreatitis and Sphincteritis, Proc. Staff Meet. Mayo Clin. **9**: 772-775 (Dec. 19) 1934.

15. Newman, Charles: Physiology of the Gallbladder and Its Functional Abnormalities: I. Physiology, Lancet **1**: 785-791 (April 15) 1933; II. Disorders of Motility, ibid. **1**: 841-848 (April 22) 1933; III. Abnormalities of Concentration and Secretion in the Gallbladder, ibid. **1**: 896-901 (April 29) 1933.

16. Judd, E. S.: Condition of the Common Duct after Cholecystectomy, J. A. M. A. **81**: 704-709 (Sept. 1) 1923.

liver and pancreas. In a few cases postoperative colic is not satisfactorily explained except on a neurogenic basis, and some type of biliary dyskinesia may be responsible for the difficulty.

ABSTRACT OF DISCUSSION

DR. COLIN G. SUTHERLAND, Montreal: In the Royal Victoria Hospital in Montreal, for several years, we have been dissatisfied with the results of the operation in certain cases. Dr. A. L. Wilkie, working on the production of gallstones, found that increasing the concentration of taurocholate and glycocholate salts in bile would increase the saturation of cholesterol. This seemed like a promising lead for investigation and probable therapy. We have used cholesterin-free sodium taurocholate in large doses with a low cholesterol diet in three different types of cases: (1) functioning gallbladder with stones, not operated on, (2) functioning gallbladder not operated on, stones removed and gallbladder closed without drainage, and (3) gallbladder removed, with common duct colic. The results have been most encouraging. The following protocols are illustrative: 1. A woman, aged 19, had intermittent attacks of colic requiring morphine for ten months. The gallbladder was visualized and contained many cholesterin stones. She was given 60 grains (4 Gm.) of taurocholate daily with an appropriate diet and she has been perfectly well. She has taken the capsules steadily during three years without toxic symptoms. 2. A woman, aged 40, insisted that her gallbladder be not removed. Roentgen examination showed numerous cholesterin stones with some evidence of function. The stones were removed and the gallbladder closed without drainage. She has been perfectly well ever since. 3. A woman, aged 54, had a cholecystectomy five years ago and the functioning gallbladder was removed with one stone. The attacks continued from three to four each month. On diet and 30 grains (2 Gm.) of sodium taurocholate daily she had three mild attacks in one month and none have occurred since. Follow-up roentgenograms in these cases have failed to show any recurrences of stones in the patients operated on. Clinically they are ostensibly in perfect health. Whether the capsules alone without operation will suffice is difficult to say.

DR. HENRY A. RAFSKY, New York: The subject of neurogenic instability, before and after cholecystectomy, has been stressed. The diagnostic and therapeutic difficulty arises here from the similar symptom complex encountered in nervous persons and in patients with an atypical history of disease of the biliary tract; furthermore, it is not uncommon for patients with a psychogenic background to have an associated ailment of the gall tract. In treating these patients, I have been guided by the microscopic examination of the preoperative specimens of bile. The presence of numerous cholesterin and carbonate crystals and an abundance of calcium bilirubinate pigment, separately or collectively, in the bile indicate active cholecystic disease, and this disorder should be treated primarily. On the other hand, if in these patients repeated examinations of the bile do not reveal many crystalline elements, it may be concluded that the disease of the biliary tract is coincidental and that surgical intervention is inadvisable, notwithstanding the cholecystographic observations. Pancreatitis and hepatitis are so frequently associated with pathologic changes of the gall tract that it is difficult to appraise these disorders in the light of sequels after cholecystectomy. In 50 per cent of twenty-two patients before operation, pathoglycemic curves and glycosuria were observed. After cholecystectomy the blood sugar returned to within normal limits and the urine was sugar free in all but two patients. In one of the cholecystectomized patients who had a recurrence of abdominal pain, the tolerance test again showed a hyperglycemic curve and glycosuria. The relation of the sugar tolerance to cholecystectomy is still under investigation. Choledocholithiasis as a causative factor of postcholecystectomy colic is well known. In trying to detect the presence of latent jaundice in these cases and its time relationship to the onset of pain I have found the icteric index (Bernhard-Maue method) of great value. Additional aids employed to diagnose choledocholithiasis are bile and stomach lavage microscopy. Reference has been made to splanchnic nerve block to relieve colic after cholecystectomy. Crile advocates the use of splanchnic nerve block and avoidance of the sympathetic system at the time of the original operation to prevent subsequent pain and indigestion following cholecystectomy. Pathologic processes found at reoperation, after cholecystectomy, are often out of all proportion to the clinical history, a fact which was emphasized in a recent editorial in THE JOURNAL.

FUNCTIONAL STUDIES IN PATIENTS WITH THE NEURODERMATOSES

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Increased interest is being evinced in so-called functional medicine by workers in all branches, and the functional approach as contrasted to and supplemental to but not as a substitute for the mechanistic approach is being taught more and more to undergraduate and postgraduate students of medicine. One of us,[1] on the basis of intensive study of the patients themselves, has suggested the classification of certain dermatoses as neurodermatoses, since they are always found in patients with neurocirculatory instability. Stokes[2] prefers the term "diathetic makeup," and adds: "One might call it 'neurodermobronchionasomucosal lability' without having named all the elements involved. This state of inborn tissue lability and hyperirritability is hereditary in character." As we shall state later, we believe that the term "protoplasmic instability" expresses our conception of the condition.

Careful study of patients has convinced us that an underlying instability is present and plays an important rôle in the development of the neurodermatoses as well as other functional diseases, including those that can be proved to be allergic. This functional approach is usually graciously received by undergraduate and postgraduate students, sometimes with reservations. The intangibility of the situation makes it difficult to produce convincing proof of some of our ideas. The present study was undertaken for the purpose of utilizing certain fundamental studies which seemed to give promise of aiding in a better understanding of this group of patients. The methods used in the valuable studies of Draper,[3] Petersen and Levinson[4] and others have been utilized. Their very multiplicity tends to preclude proof in either direction but should furnish data from which tentative conclusions may be drawn or further work may be suggested.

The dermatologist is peculiarly fortunate in that the organ which he is studying in its normal or pathologic state is on the outside of the body and readily observable. Evaluation of changes for better or worse does not depend on the patient's own interpretation, which may be highly subjective. It is therefore not illogical to assume that the dermatologist may be able to acquire

From the Section of Dermatology of the Department of Medicine, University of Chicago.

Read before the Section on Dermatology and Syphilology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Becker, S. W.: Dermatoses Associated with Neurocirculatory Instability, Arch. Dermat. & Syph. **25**: 655 (April) 1932.
2. Stokes, J. H.: The Complex of Eczema, J. A. M. A. **98**: 1127 (April 2) 1932.
3. Draper, G.: (*a*) Human Constitution, Philadelphia, W. B. Saunders Company, 1924; (*b*) Disease and the Man, New York, Macmillan Company, 1930.
4. Petersen, W. F., and Levinson, S. A.: The Skin Reactions, Blood Chemistry and Physical Status of "Normal" Men and of Clinical Patients, Arch. Path. **9**: 147 (Jan.) 1930.

more information with less effort than a worker in another field of medicine.

A group of eighty patients presenting typical clinical examples of the neurodermatoses represented in this series was selected at random from those in the University Clinics, with diagnoses as follows: neurodermatitis (dry type), nineteen; pruritus ani or vulvae, five; neurodermatitis (exudative type), twenty-eight; dyshidrosis, four; urticaria, fifteen; lichen planus, two; dermatitis herpetiformis, one; neurotic excoriations, one. The following were also included: aphthae, two; vitiligo, one; summer prurigo, one.

METHOD OF EXAMINATION

The following is a detailed description of the methods employed. Testing of the skin by the patch and scratch method was not carried out as a routine but was performed in some cases. The patch tests were uniformly negative, and, since information obtained by scratch tests has little or no practical relation to the dermatoses on the basis of interpretation dependent on present-day knowledge, results will not be mentioned here but will be included in a more complete report on studies relative to the value of skin testing in dermatology.

All these studies were done as far as possible on the same day in order to have the status of physiologic function as nearly constant for all tests as possible. Calculations, follow-ups and further studies not influenced appreciably by this factor were done subsequently.

Care was also exercised to see that all studies on women were done as nearly as possible in the middle of the intermenstrual period, so as to avoid most of the functional changes incident to the menstrual cycle.

Personal History.—Careful questioning was made as to the present complaint, onset, causal factors, environmental circumstances, sensitizations, past history and menstrual, marital and occupational history; also the elicitation of any history of infantile eczema, asthma, chronic bronchitis, functional colitis, hay fever, migraine, vasomotor rhinitis and urticaria.

Family History.—The history of each member of the immediate family, relatives, and all forebears was

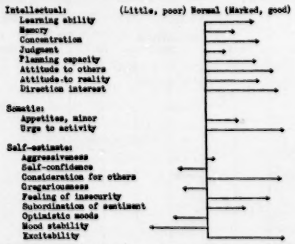

Chart 1.—Psychomotor panel. (Chart made up of composite analysis of patient by patient, his family, and study by examining physician.) Form followed is that of Dr. Smiley Blanton.

recorded, as to health, cause of death, physical structure and activity, mental activity, disease tendencies, occupation, outlook on life, adjustment to environments, and the incidence, past or present, of asthma, hay fever, chronic bronchitis, eczema (infantile), migraine, functional colitis, vasomotor rhinitis, urticaria, eczema and neurodermatitis.

Psychomotor Panel.[3b]—The chart form devised by Blanton of the Child Guidance Clinic was used. This takes into consideration the intellectual activities of the patient, the somatic demands, the self estimate, the mood, the reactions to pain and pleasure, the adaptation imperative, and special traits in reference to the graphic and rhythmic arts. We shall consider the application and interpretation of this psychologic study in detail in the treatment of experimental data. The patient was asked to fill out a questionnaire dealing with each phase in specific questions, and on the return of the filled out sheets one of us (v. d. E.) reviewed them with the

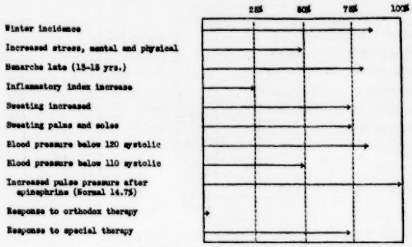

Chart 2.—Manifestations common to all neurodermatoses.

patient and revised the answers as objectively as possible. Thus, this study is a composite picture of the patient's self analysis and that of his immediate family, interpreted and objectively arranged by the investigator. Fallacies were guarded against as far as possible.

Physical Examination.—A careful and detailed physical examination was made on each patient, with special reference to color, moisture and texture of skin, characteristics of the hair, and details of any cutaneous lesions.

Anthropometric Measurements.—Following the form devised by Draper,[3a] a complete anthropologic study was made on each patient when feasible. Two patients were so obese as to preclude any accuracy, and a number were so young as to cause doubt concerning the value of the results. These patients were omitted. Hair distribution, color, circulatory changes in the skin in various regions, and all the usual indexes were calculated. Only the most important indexes and measurements were utilized in the data presented.

Urinalysis was performed and the Kolmer and Kahn reactions of the blood serum were determined on each patient.

Special Tests.—The majority of the tests were identical with those used by Petersen and Levinson [4] in their study of 100 normal men, in order to have some basis for control and comparison. A brief description of the tests follows:

A small square of cantharides plaster was firmly pressed on previously cleaned skin on the inner surface of the thigh, covered with a dressing, and allowed to remain for four hours. From that time it was observed constantly until a blister formed, the time necessary for production of which was recorded.

Fluid from the cantharides blister and blood serum obtained simultaneously were placed in a refractometer and the index of refraction obtained. After allowing for nonprotein factors, the percentage of protein in each was calculated and the following formula was used: $\frac{\text{per cent of protein in blister fluid}}{\text{per cent of protein in serum}}$ equals permeability ratio.

The inflammatory index was calculated from these data, the formula $\frac{\text{permeability ratio}}{\text{blister time in hours}}$ equals inflammatory index being used.

Sedimentation time was determined on each patient following the usual technic, Cutler's tubes being used with sodium citrate as an anticoagulant.

Erythema time was determined by exposing a small area either on the antecubital surface of the arm or on the inner surface of the thigh to the water-cooled quartz lamp. Contact exposure was for thirty seconds, and the time of the appearance of erythema was observed. Erythema time was also observed following one minute's application of ice to the chest wall and following exposure to dry heat from an electrically heated coil. In a few instances in which the factor of heat

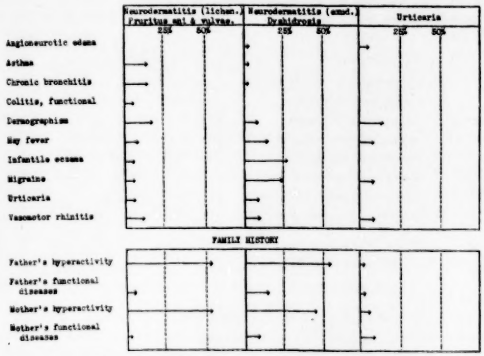

Chart 3.—Associated functional diseases: History.

or pressure was considered a possible cause, hot and cold water was allowed to trickle over the skin, and pressure was made by various weights.

Studies on reaction of the skin to friction were made with an instrument having a rounded stylus on one end and a shelf for the holding of various weights, which increased the pressure on the stylus. The stylus was then drawn over the skin of the middle of the back and the appearance time and extent of both the flares and the wheals were noted.

The reaction of the skin as regards flares and wheals following the application of drugs was studied as follows: Drops of saline solution (control), epinephrine hydrochloride 1:1,000, histamine hydrochloride 1:1,000 and thyroxine 1:10,000 were placed at wide intervals on the skin of the volar surface of the forearm and, with a separate needle for each drug, punctures of the superficial epidermis were made through each drop. The solutions were then gently removed with gauze and the time and extent of appearance of both flares and wheals recorded. Caffeine monobromide (1:100) and caffeine sulphate (1:1,000,000) were also used at first, but since no reactions were observed their use was discontinued.

The patient was placed on an examining table in a horizontal position and the blood pressure was taken at once. Readings were repeated at five minute intervals until the readings became fairly constant at resting level. The variations in blood pressure during this interval were noted and the data used as an index of stability.

At resting level, 0.5 cc. of 1:1,000 epinephrine hydrochloride was injected subcutaneously and readings were taken at five minute intervals until the blood pressure readings returned to resting levels.

RESULTS

These data are presented with a distinct appreciation of their limitations. The various series are small, and control consisted of comparison with results that have been given as normal for the methods employed. Cornbleet has called attention to the fact that repeated tests must be made, because of the instability of these patients. This was not feasible in our study. All the data were obtained by one of us (J. M. v. d. E.), since another worker might place a slightly different interpretation on some of the results; therefore they are uniform throughout and reflect the differences in the various groups of patients.

Certain data did not vary throughout the entire group, so that they can be presented in composite tables. These include the psychomotor panel, seasonal incidence, mental and physical stress, menarche, inflammatory index, degree of sweating, increase in pulse pressure after epinephrine, response to orthodox therapy and response to special therapy designed to reduce the patient's underlying instability and exhaustion. These results are presented in charts 1 and 2.

In studying the determinations with apparent differences in the various groups it was seen that results on patients with the dry type of neurodermatitis and those with pruritus ani and vulvae corresponded closely. These conditions are not infrequently associated in the same patient. It was also seen that patients with dyshidrosis and exudative neurodermatitis, conditions which are often associated and apparently closely related, gave similar results. Consequently, these patients were grouped together in the first two groups. The third group comprises patients with urticaria. The other groups were too small for tabulation, so that charts 3 and 4 represent only the three groups.

While each question in the psychomotor panel may not be conclusive in itself, yet from the whole group one may draw conclusions that, in the main, will be true to fact.

In the intellectual phase a definite trend to an alertness and quickness of comprehension and mental activity is found. In learning ability, planning capacity, attitude to rights of others and attitude to reality are found talents and activity in excess of normal. On the whole the patients are exteroceptive in type. The mentally lazy and inert are absent from our group.

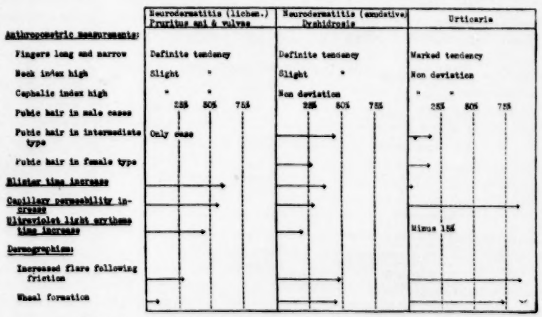

Chart 4.—Associated functional diseases: Physical examination.

In the somatic phase also definite trends are found. There is a pronounced variation in the direction of greatly increased neuromuscular activity and excitability. We can also say, from personal observation, that the majority of these patients are quick, intent, make a great many useless movements and evidence a restlessness that is not normal. A few of the patients

present the picture given by Stokes: "tense mobility with almost a rigid restraint of all actions, while the eyes peer out, quick and birdlike, at one as 'holes burnt in a blanket.'"

In the self estimate, in which we had to rely mainly on the patients' own evaluation and those impressions of them given by close relatives, are found interesting facts. On the whole, the patients tend to be a little timid, very suggestible, touchy, changeable and quick. They are overgenerous and altruistic. Emotional instability in these patients expresses itself in worry and brooding rather than in transient emotional storms.

The menarche tended to be late (from 13 to 15 years) and functional disturbances of menstruation seem to be slightly more common than normal.

The inflammatory index was only moderately increased.

Sweating usually was markedly increased, usually palmar, plantar and axillary, a finding that has been emphasized by Stokes.

The blood pressure average was low, the systolic pressure usually being between 100 and 110 mm. of mercury. Many of the patients had unstable pressure levels, even while resting, and these were markedly accentuated during ordinary physical activity. After injection of epinephrine, marked lability was evident, with great increase in pulse pressure and cardiac output.

The incidence of functional disturbances such as asthma, hay fever, vasomotor rhinitis, chronic bronchitis, functional colitis and urticaria is higher than normal in our second group, less so in the first group and still less in the urticarial group.

The family history shows slightly greater tendency to functional diseases than normal in the first two groups but not so pronounced in patients with urticaria.

The physical examination revealed the patients to be in excellent general health, rather better than the average.

Anthropometric measurements did not reveal any striking abnormalities. There was a tendency toward an intermediate and female type of pubic hair in male patients, a tendency to long and narrow fingers in all three groups, a high neck index in the first two groups and a slight tendency to a high cephalic index in the first group.

The index of capillary permeability showed a definite increase, especially in urticaria and dry neurodermatitis, and the blister time was markedly increased in dry neurodermatitis, less so in the exudative type, and practically normal in urticaria.

Dermographism, as regards both flare and wheal, was progressively increased in the three groups, especially in urticaria.

The flares and wheals from drugs placed on the skin followed by acupuncture were either normal or subnormal. The sedimentation time was always normal.

The erythema time following application of water-cooled ultraviolet radiation showed a moderate increase in the first group, a slight increase in the second group, and decreased erythema time in patients with urticaria. Erythema times following heat and cold were normal. Results from pressure were negative.

COMMENT

The group of manifestations common to all patients with neurodermatoses may be interpreted as representing general features, mainly endocrine, nervous and vascular. As has recently been expressed by one of us,[5] we believe that there is an underlying protoplasmic instability shared by every cell of the body. Since the most prominent manifestations refer to the vascular and especially the nervous system, the term "neurocirculatory instability" was coined to represent the condition, although "protoplasmic instability" might be preferred. In a somewhat similar study, Cornbleet[6] wrote: "The great instability of the factors studied was the most outstanding observation. This denoted an inability to adjust rapidly to stimuli or an overcompensation for them." He added: "Such measurable instabilities are probably a few of the bases for such vague, inclusive terms as Czerny's diathetic state. The capacity for allergy can be built from such a background." One of us[5] has stated: "I believe that all sensitizations in human beings, allergic or not, are made possible only by the underlying protoplasmic instability with which the patients have been born, and which has been increased by bodily exhaustion produced by a high powered nervous system."

The psychomotor panel presents the average characteristics of patients with neurocirculatory instability and furnishes a basis for psychotherapy, which is a minor part of our therapeutic armamentarium. Therapeutic methods designed to correct the underlying instability and exhaustion adjust some of these factors automatically by decreasing nervous irritability, but this adjustment can be facilitated by a brief psychotherapeutic session. More extensive psychotherapeutic procedures as advised by Stokes[7] are occasionally necessary.

The seasonal variations bear out the results of other investigators in that winter and spring are the worst seasons of the year, with fall next, and comparative relief from symptoms during the warmer months.

On the whole, patients with neurodermatoses tend to drift into occupations requiring more activity and responsibility than usual, and they are overconscientious in performance of their duties, which accounts for the increased mental and physical stress. Success is good, as a rule, unless the dermatosis is so severe as to interfere with their work, or their instability is so great that they will not tolerate routine work.

The late menarche is interesting in that many female patients in the group were hyposexual. An early menarche occurs in tropical countries, where hypersexuality is more frequent.

The low blood pressures are in accord with those in a previous study.[1]

The therapeutic response to added treatment, as previously outlined,[1] of rest, relaxation, sunshine therapy, sedation, and reeducation as protection from useless worry and strain and as protection against the unavoidable but nevertheless very real shocks and stresses of ordinary life in an unsettled economic world, has yielded gratifying results. Bearing in mind that rest per se is the greatest standby of every physician in treating most of the ailments of humankind, and that any pathologic condition will respond somewhat to rest, we feel that in this group of patients it holds a fundamental place in therapy.

The incidence of functional diseases in family histories is rather less than we expected. The small num-

5. Becker, S. W.: Commoner Diseases of the Skin, in Fishbein, Morris: National Medical Monographs, New York, National Medical Book Company, 1935.
6. Cornbleet, Theodore: Some Nonspecific Dermatoses, Arch. Dermat. & Syph. **27**: 956 (June) 1933.
7. Stokes, J. H.: An "Office" Technic of Treating Functional Neuroses as Complications of Organic Disease, with Special Reference to the Dermatoneuroses, J. A. M. A. **105**: 1007 (Sept. 28) 1935.

ber in the urticaria group is partially in accord with the observations of Stokes, Kulchar and Pillsbury,[8] who stated that urticaria is not an associate of other neurodermatoses. They did, however, find an "allergic-neurogenous" background in 60 per cent of patients with urticaria as compared with 25 per cent in psoriasis, acne vulgaris and impetigo. In our group, the highest incidence of association with other functional diseases, including the neurodermatoses, was found in patients with exudative neurodermatitis.

The excellent general health of patients in our groups is in accord with the observations made [1] in a previous study. The low blood pressure seems to protect them from the serious diseases of middle life.

Anthropometric measurements yielded disappointing results, possibly because of the variety of races and mixtures. The tendency toward long and narrow fingers and intermediate and female distribution of pubic hair in males is interesting in that it might be interpreted as a tendency toward female characteristics, since the neurodermatoses are more frequent in females than in males.

If the sedimentation time is an index to allergy, as Schulhof [9] stated, we are evidently not dealing with allergic conditions, since all results were within normal limits.

The increased blister time may be of significance, since it was found previously [1] that patients with neurodermatoses have low basal metabolic rates, and decreased blister times are usually found in patients with hyperthyroidism having increased basal metabolic rates.

The marked difference in the ultraviolet erythema time reflects the differences in the skins of patients with urticaria and those with neurodermatitis. While our results following heat were normal, even when the history suggested its etiologic connection, we have previously observed one case reported by Tannenholz [10] in which heat was definitely causative. Pressure evoked no response, even in a patient in whom angioneurotic edema developed on the shoulder from pressure of a fire hose during a fire. There may have been an element of deep friction, which we could not duplicate.

Perusal of the charts showing differences in results in the three groups suggests that certain systems are predominantly involved in these various diseases. The differences are especially marked in patients with urticaria. Identification of these weakest links, so to speak, may lead to therapeutic attempts which may offer better results than the general procedures that are being used at present. For instance, it is well established that epinephrine and ephedrine are efficacious in a palliative way in urticaria and hence are valuable as emergency initial measures. We do not believe that it is safe to venture far from an assumption of general instability, and since therapeutic results based on a knowledge of the presence of this instability are much more satisfactory than those depending on hypothetical endocrine imbalance, hypersensitiveness, allergic or otherwise, and other more or less tangible factors, general measures offer the best outlook. A great deal of work remains to be done in following up these clues and placing therapy on a rational basis. Large series of all the neurodermatoses may produce interesting and valuable data.

8. Stokes, J. H.; Kulchar, G. V., and Pillsbury, Donald: Effect on the Skin of Emotional and Nervous States, Arch. Dermat. & Syph. **31**: 470 (April) 1935.

9. Schulhof, Kamil: Increased Suspension Stability of Erythrocytes: Its Frequency in Allergic Individuals and Their Relatives, J. A. M. A. **100**: 318 (Feb. 4) 1933.

10. Tannenholz, Harold: Erythema Caloricum Associated with a Remote Reaction to Heat (Neurodermatitis and Dyshidrosis), Arch. Dermat. & Syph. **28**: 168 (Aug.) 1933.

SUMMARY AND CONCLUSIONS

Functional study of eighty patients with various neurodermatoses (neurodermatitis [dry type], neurodermatitis [exudative type], dyshidrosis, urticaria, lichen planus, pruritus ani or vulvae, dermatitis herpetiformis, neurotic excoriations, aphthae, vitiligo, summer prurigo) was made by the following procedures: history, family history, psychomotor panel, physical examination, anthropometric measurements, urinalysis, Kolmer and Kahn reactions of the blood serum, blister time, permeability ratio, inflammatory index, sedimentation time, erythema time, friction, introduction of drugs by acupuncture and blood pressure studies.

Some results were uniform in all types of neurodermatoses and probably reflected the general instability of these patients. Many manifestations in patients with urticaria showed marked differences from those in patients with neurodermatitis, suggesting a different mechanism. Study of all patients, along with family histories, makes us believe that they have been born with generalized protoplasmic unrest, manifested chiefly as "neurocirculatory instability," which results in nervous exhaustion and increased instability. Therapeutic measures directed toward relief of this general instability and exhaustion seem to offer the best therapeutic promise. Further study of larger series of patients will be necessary before more specific therapy can be considered.

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ABSTRACT OF DISCUSSION

DR. PAUL A. O'LEARY, Rochester, Minn.: I believe that Drs. van de Erve and Becker have discussed the incidence of certain dermatoses in what is known commonly as the neurotic personality or colloquially as the high-strung individual. The authors admit in their presentation that there is an intangible element in neurodermatoses or dermatoses of neurogenic origin, a premise with which most dermatologists are in accord. I confess a certain degree of coolness for the concept of neurogenic dermatosis as expressed by them. I can sum up my impression by repeating the sage comment that, when we believe, we stop thinking. If a larger series of control cases of dermatoses, other than those which the authors call neurogenic, were included in this appraisal, the same or a similar incidence of high-strung personalities might be encountered. It is rather hazardous to discuss pruritus ani as solely a neurogenic disease, because of the established examples of the bacterial and mycotic origin of the condition as well as the various colonic diseases so common in the production of pruritus ani. The same idea is applicable in the case of lichen planus, dermatitis herpetiformis, vitiligo and aphthous lesions in the mouth. I question that these should be admitted to the group of neurogenic diseases. The term "neurogenic dermatosis" has a definite application, for example, in the group reported by Dr. Becker several years ago. There have been several cases of this type presented recently before the Chicago Dermatological Society, the individuals having developed a definite dermatitis following the resection of a gasserian ganglion. I cannot agree with the idea of classifying a dermatitis in the neurogenic group when a definite etiologic factor other than nervous exhaustion has been described. I feel that when a neurogenic dermatosis is discussed it must be discussed in a negative manner. Such a diagnosis, presumptive at best, should be made only after a most thorough search has been made for concrete etiologic agents and a prolonged observation has failed to offer an explanation other than nervous exhaustion.

DR. SAMUEL M. PECK, New York: Allergy cannot be disregarded as a very important factor in the study of neurodermatitis in children. Children with neurodermatitis have a much higher incidence of personal and familial allergy than those of the same age group with a vesicular eczema. A child with a strong atopic history and a vesicular eczema in the first year is almost destined to develop a typical neurodermatitis if the skin eruption extends beyond the first year. That is why I have referred to the neurodermatitis as an eczema. Too little stress has been placed on those instability and neurogenic factors which play such an important part in the development and continuance of this condition. My conception, however, is perhaps a little different. I conceive the difference between ordinary vesicular eczemas and atopic (neurodermatitis) eczema to be one of threshold. I mean by that that children with an atopic eczema are born with a lowered threshold for sensitization; that is, they have a greater tendency to become sensitized to allergenic substances. I believe that time may show that the neurogenic factor plays an important part in the raising or lowering of this threshold for the elicitation of sensitivity reactions.

DR. JOHN H. STOKES, Philadelphia: Until those of us who are working in this field succeed in bringing our results down to the point at which we can tell in figures exactly what is going on as the expression of the influence of the central and peripheral nervous systems on cellular mechanism, we are going to seem to sincere observers to be moving in the clouds and believing rather than thinking. Dr. Becker's instability concept shares with the laborious and extended observations of Brill and the current theorizing of the allergist the need to get down to brass tacks on mensuration and a consequent precise definition of the general constitutional and the local or individual cellular characteristics as expressed in elementary physiologic terms. Referring specifically to the observations of the authors, I hope that in time these studies of habitus, the shape of the face and width of the shoulders will lead us to the heart of the matter of the neurogenic background. This, as I see it, is the atrocious energy output over a special series of channels in the central nervous system, originating particularly, it would seem, from the floor of the fourth ventricle, which characterizes the possessor of a neurogenic background or a neurocirculatory instability. Why is it that he seems to be bombarding his periphery with this enormous and overbalanced energy, which requires all the reining in that he can do to get him through seventy years of life without obvious disaster? Almost certainly it will be the physiology of the vascular system and its nervous mechanism that will have to be made the principal point of attack. The importance of a selection of method is well illustrated by the status of capillary microscopy, for example, which, because it is too far out toward the extreme end and is concerned less with the function of the entire vascular bed than with the shape of individual minute blood vessels, has made relatively small contribution thus far to our understanding of the neurovascular physiology of the skin. Much more significant, however, is the entire vascular bed and its function, as displayed in the blood volume and the arteriovenous proportions passing through the skin at a given time. This it may be possible to recognize by colorimetric methods. We are in accord with other investigators, such as Sheard, worrying over clinical photometry in the effort to find what the cutaneous vascular bed is doing under the conditions which van de Erve and Becker have been studying. I agree with Dr. Peck in that sooner or later we shall find in our study of the allergic-neurogenic individual that the allergic state stands back to back, Janus faced, with the function of the nervous system. It has been wisely said by Dr. Peck and other students of this relationship that the raising and lowering of the threshold and the broadening and narrowing of the base of what is today called allergy is one of the functions of some portions of the nervous system.

DR. THEODORE CORNBLEET, Chicago: The people having these disorders have one common characteristic: they respond too readily and out of all proportion to any stimulant. Their reactions may be likened to pendulums that swing too far and bang against the framework that houses them to damage it. We all know that cells have the power to regain their states of equilibrium, provided they have not deviated too far from it. If the change, however, exceeds a certain critical degree, it becomes permanent. This is known in biology as the law of reversible and irreversible change. The investigator doing this sort of work unconsciously hopes to find original causes. In this I feel that he is doomed to failure. He may measure functional capacities or reactive states, but I think that he will be unable to discover the prime movers with this approach. This type of investigation is not directed toward seeing the performers, but it pieces together the scenery in back of the real actors. It is nevertheless of immense importance, because through these means we shall more likely discover original causes and understand them better.

DR. EUGENE TRAUGOTT BERNSTEIN, New York: Blushing, pallor and sweating are expressions of an emotional state. The vascular apparatus is of basic value in expressing all those states and all those skin disorders, and the psychotherapeutist can do much by applying his methods; he must not be rigid, however, but must understand every case individually. I think that even in acne rosacea and urticaria the raising and lowering of the blood pressure plays an important part, but the nervous system also is involved in allergy. When a patient who is allergic to lobsters comes into the room and sees a picture in which is reproduced a lobster and gets some allergic condition of the skin, it must be admitted that allergy and psychogenicity have something in common. I think that neurodermatitis or neurodermitis has probably very little to do really with a neurotic basis but is only a term selected because there is no better one to apply.

DR. S. WILLIAM BECKER, Chicago: A transition in medicine is being passed through which is not limited entirely to dermatology. The internists, the endocrinologists and the gastroenterologists are all gradually focusing their attention on so-called functional disease, and we believe that the conditions that we have studied fall into this large group. We have no particular choice of terms; we have used the terms that seem most appropriate and have been used for a long time by various workers. If some one can identify the processes and substitute better terms, we shall be very glad to adopt them. We feel that these conditions must have exhaustion as an underlying factor. Dr. Minot at the opening of the new Eli Lilly Laboratories in Indianapolis stated that one does not need to enter the laboratory to do research; he said that one can do research by studying one's patients, and this is the type of research that we have been trying to carry on. If infections, infestations and neoplasms are eliminated from dermatology, the dermatoses are practically confined to human beings, who differ from animals in the high development of their nervous system, so that more and more conditions are going to be understood as having some relation to the nervous system. When we did our work, instead of choosing supposedly normal patients for controls we simply took the results of Drs. Peterson and Levinson on 100 supposedly normal individuals, and the differences between our cases and theirs were shown. In reply to Dr. O'Leary's contention relative to pruritus ani, we had elminated all organic causes of pruritus ani and pruritus vulvae before we studied these particular individuals, so that these patients fall into the so-called functional group. It is perfectly true, as Drs. Stokes and Peck have said, that true allergy also occurs in these patients, and the combination of allergy and nervous exhaustion makes this study extremely difficult. It is only a beginning of what we hope will some day bear fruit.

Science and World Progress.—Looking back on this three-year development of heavy hydrogen, my claim is that no one could have had the wisdom to direct research along these different lines in such a way as to produce better results. Each of these different contributors to scientific research was impelled only by his interest and enthusiasm in creative work, and any regimentation would have been fatal. We must not interfere with our scientists. We must not starve them nor frighten them, for the progress of the world depends upon them. Research in science has been one of the few outstanding successes in the human race, and we need not less, but more of it.—Daniels, Farrington: Photons in Chemistry and Biology, *Science* **81**: 523 (May 31) 1935.

TOTAL THYROIDECTOMY FOR INTRACTABLE HEART DISEASE

SUMMARY OF TWO AND ONE-HALF YEARS' SURGICAL EXPERIENCE

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It is now approximately two and a half years since total ablation of the normal thyroid gland was first successfully performed for the relief of chronic intractable heart disease at the Beth Israel Hospital in Boston.[1] The results obtained in ninety patients who have been submitted to this operative procedure indicate that this surgical therapeutic measure has a definite place in the treatment of chronic intractable heart disease.[2] A brief review of our experience will be outlined in this communication.

RATIONALE

The original researches on the velocity of blood flow by Blumgart and his co-workers [3] demonstrated that an intimate relationship existed between tissue demands as expressed by the basal metabolic rate and the speed of blood flow. As the demands of tissue metabolism mounted, the rate of blood flow was proportionately increased. With the metabolism depressed, as in myxedema, the velocity of blood flow was correspondingly reduced. In patients with circulatory failure the rate of blood flow was definitely slower than in compensated or normal individuals with a similar metabolic rate. In terms of the law of supply and demand the reduced speed of blood flow or supply of blood in a patient with congestive failure might be insufficient for the demands of the normal metabolism but might, nevertheless, be adequate for the lessened requirements of a reduced metabolic rate. This significant physiologic relationship between the demands of metabolism and the supply of blood by the heart led to the belief that the production of artificial myxedema in a patient suffering from chronic heart disease and having a normal metabolic rate might result in definite clinical improvement.

Striking clinical improvement in thyrocardiac patients following subtotal thyroidectomy is a well recognized fact and is in accord with the preceding considerations as far as it exemplifies the value of diminishing the load of an overburdened heart by the reduction in the metabolic level.

Maximal subtotal thyroidectomy, bordering on complete ablation of the gland, performed on two patients in October and November of 1932, resulted in a conspicuous but temporary clinical improvement, which paralleled the fall in the metabolic rate. Both patients, however, relapsed to their preoperative clinical state as the metabolism returned to normal. Roentgen irradiation failed to inactivate the remaining thyroid remnants and a secondary surgical attempt to remove them proved unavailing, as the fragments of glandular tissue were found inextricably enmeshed in a matrix of dense scar tissue. A study of the results obtained in these two cases suggested to Blumgart the advisability of complete excision of the thyroid gland in order to establish a persistent lowering of the metabolic rate.

A careful study of the special surgical problems involved was made before proceeding with the first complete thyroidectomy. On the basis that the latter procedure necessarily implies the removal of every vestige of thyroid tissue, we performed the first recorded total ablation of the normal thyroid gland for the relief of chronic intractable heart disease on Dec. 15, 1932. During the two and a half years that has elapsed, more than ninety total thyroidectomies have been performed by us, with the induction of artificial myxedema in every instance.

SELECTION OF PATIENTS

While the criteria for the selection of patients for operation have been carefully described in previous publications,[4] a brief consideration at this time of this highly important phase of the investigation is in order, even at the risk of repetition. The selection of patients properly suited for this operative procedure is the problem of the cardiologist. Thus the responsibility of achieving favorable results devolves on the internist as well as the surgeon. Close cooperation with a competent internist will undoubtedly serve to reduce the incidence of failures to a minimum. Operations ill advised will unjustifiably throw into disrepute an otherwise valuable therapeutic measure.

From the very outset we have recommended that this operation be applied only to those patients who, despite all available medical measures, continue to remain chronic invalids. In general, it may be stated that those patients with a slowly progressive heart lesion who continue to suffer recurrent attacks of failure on exertion over a prolonged period of time will probably show a favorable response to operation. On the other hand, patients with congestive failure, regardless of cause or type of lesion, showing a short and rapidly progressive course are excluded as unfavorable risks. In the presence of severe impairment of renal function and acute pulmonary or active rheumatic infection, the operation should not be undertaken.

From the Surgical Service of the Beth Israel Hospital.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. Blumgart, H. L.; Levine, S. A., and Berlin, D. D.: Congestive Heart Failure and Angina Pectoris: The Therapeutic Effect of Thyroidectomy on Patients Without Clinical or Pathologic Evidence of Thyroid Toxicity, Arch. Int. Med. **51**: 866 (June) 1933.

2. Berlin, D. D.: Therapeutic Effect of Complete Thyroidectomy on Congestive Heart Failure and Angina Pectoris in Patients with no Clinical or Pathological Evidence of Thyroid Toxicity: II. Operative Technic, Am. J. Surg. **21**: 173 (Aug.) 1933.

3. These include:

Blumgart, H. L., and Yens, O. C.: Studies on the Velocity of Blood Flow: I. The Method Utilized, J. Clin. Investigation **4**: 1 (April) 1927.

Blumgart, H. L., and Weiss, Soma: Studies on the Velocity of Blood Flow: II. The Velocity of Blood Flow in Normal Resting Individuals, and a Critique on the Method Used, ibid. **4**: 15 (April) 1927.

IX. The Pulmonary Circulation Time, the Velocity of Venous Blood Flow to the Heart, and Related Aspects of the Circulation in Patients With Cardiovascular Disease, ibid. **5**: 343 (Feb.) 1928.

X. The Relation Between the Velocity of Blood Flow, the Venous Pressure and the Vital Capacity of the Lungs in Fifty Patients with Cardiovascular Disease Compared with Similar Measurements in Fifty Normal Persons, ibid. **5**: 379 (Feb.) 1928.

Weiss, Soma, and Blumgart, H. L.: The Effect of the Digitalis Bodies on the Velocity of Blood Flow Through the Lungs and on Other Aspects of the Circulation: A Study of Normal Subjects and Patients with Cardiovascular Disease, ibid. **7**: 11 (April) 1929.

Blumgart, H. L.; Gargill, S. L., and Gilligan, Dorothy R.: Studies on the Velocity of Blood Flow: XIII. The Circulatory Response to Thyrotoxicosis, ibid. **9**: 69 (Aug.) 1930.

XIV. The Circulation in Myxedema, with a Comparison of the Velocity of Blood Flow in Myxedema and Thyrotoxicosis, ibid. **9**: 91 (Aug.) 1930.

XV. The Velocity of Blood Flow and Other Aspects of the Circulation in Patients with "Primary" and Secondary Anemia and in Two Patients with Polycythemia Vera, ibid. **9**: 679 (Feb.) 1931.

Blumgart, H. L.: The Velocity of Blood Flow in Health and Disease: The Velocity of Blood Flow in Man and Its Relation to Other Measurements of the Circulation, Medicine **10**: 1 (Feb.) 1931.

4. Blumgart, H. L.; Berlin, D. D.; Davis, David; Riseman, J. E. F., and Weinstein, A. A.: Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of the Thyroid in Patients Without Thyrotoxicosis: X. With Particular Reference to the Pre- and Post-operative Medical Management, Ann. Int. Med. **7**: 1469 (June) 1934; Total Ablation of Thyroid in Angina Pectoris and Congestive Failure: XI. Summary of Results in Treating Seventy-Five Patients During the Last Eighteen Months, J. A. M. A. **104**: 17 (Jan. 5) 1935.

While the diagnosis of angina pectoris must be accurately established, the task of choosing from among these crippled cardiac patients subjects suitable for operation is not as great as in the group afflicted with congestive failure. If the patient's history shows a rapid progression in the number of attacks of coronary pain with frequent seizures at bed rest, thyroidectomy will probably not give lasting results. A recent coronary attack, within three months, likewise contraindicates operation. Healed coronary thrombosis, however, is not a contraindication. In several of the cases there has been a history of more than one attack of coronary thrombosis, but in no instance did the last attack occur less than four months prior to operation.

When the metabolism is below minus 15 per cent in patients of either group, operation is not recommended.

PREOPERATIVE MANAGEMENT

In patients with congestive failure, operation is deferred until they are rendered edema free by sufficient bed rest and the administration of diuretics and cardiac stimulants such as salyrgan and digitalis. Our earlier experience taught us that patients who persisted in showing signs of congestive failure up to the time of operation were likely to develop serious postoperative pulmonary complications or die too soon after their operative recovery to justify the procedure.[5] Intensive preoperative and postoperative sedation is avoided in order to guard against the accumulation of tracheobronchial secretions and the consequent danger of postoperative bronchopneumonia. One of the barbituric derivatives, usually 3 grains (0.2 Gm.) of sodium amytal, is given the night before and supplemented by one-fourth grain (0.016 Gm.) of morphine the morning of the operation. The patient's reaction to whatever drug is used should be tested preoperatively to determine the presence of idiosyncrasy. Sedation need not be so cautiously restricted in angina pectoris.

OPERATIVE CONSIDERATIONS

Anesthesia.—We believe that complete thyroidectomy in these patients with advanced heart disease performed under local anesthesia will reduce the mortality rate to a minimum.[6] Gas-oxygen anesthesia, occasionally supplemented with small amounts of ether, was employed in the first twenty-eight cases with six operative deaths, while the subsequent sixty-two patients were operated on under local anesthesia without mortality and with no postoperative complications. The elimination of operative mortality as well as postoperative morbidity can be attributed not only to increased skill in the medical management and to improvement in surgical technic but to the use of local anesthesia as well.

Deep infiltration of the lateral lobes of the thyroid, especially at the upper poles, and infiltration deep in the danger zone along the tracheo-esophageal sulcus must be carefully avoided, for it carries the risk of directly anesthetizing the concealed recurrent nerve with a resulting temporary paralysis of the homolateral vocal cord. This technical accident occurred in one patient and necessitated the termination of operation after hemithyroidectomy. The remaining lobe was successfully excised at a secondary operation.

Recurrent Laryngeal Nerve.—It has been previously stated,[7] and is again emphasized that the recurrent nerve is regarded as the greatest technical hazard of this operation. It therefore behooves the surgeon to acquaint himself with the anatomic variations in the course of the recurrent laryngeal nerve in its relation to the thyroid gland.

The variations in the course of 140 nerves as observed in anatomic dissections and comparative observations in the operating room in seventy cases in which total thyroidectomy was performed have been detailed elsewhere.[7] It was noted that about 65 per cent of the nerves coursed in the sulcus between the trachea and the esophagus and were reasonably well protected against operative injury. Approximately 25 per cent of the recurrent nerves passed through the adherent zone in close apposition to the gland and the remaining 10 per cent partially penetrated the gland substance. Obviously, therefore, it is when the nerves appear in either of the latter positions that they are in imminent danger of being seriously injured.

Injury to both recurrent laryngeal nerves is a tragedy. Danger of this calamitous complication is considerably greater in total ablation than in the usual goiter surgery. As a precaution against its development, direct laryngoscopic examination is carried out after one lobe has been extirpated, in order to ascertain the integrity of the corresponding vocal cord.[8] This applies to patients operated on under local as well as under generalized anesthesia, for we have not infrequently observed that there may be no apparent change in the quality of the spoken voice in the presence of unilateral nerve paralysis. If laryngoscopy discloses a paralyzed vocal cord on the side of the removed lobe, operation is ended to prevent the possibility of bilateral abductor paralysis. While ligation or severance will permanently paralyze the recurrent laryngeal nerve, it should be remembered that inadvertent pinching during operation will result in transient paralysis. In 100 total thyroidectomies, including all types of patients, there have been three permanent and nine temporary unilateral nerve injuries, with complete subsequent recovery in the latter nine palsies occurring from two days to approximately four months following injury. One recent unilateral nerve paralysis, probably the result of accidental pinching with a snap, was the only recurrent nerve accident in the last forty consecutive cases. We have never encountered bilateral laryngeal nerve injury.

Adherent Zone.—The recurrent nerves may be injured at any point in their course in the neck but are most subject to operative damage in the region of the adherent zone. The latter region represents the area of fixation of the lateral lobe of the thyroid to the trachea at about the level of the upper two tracheal rings and comes into clear view after one has mobilized both the upper and the lower poles and then exerts traction on the lobe toward the median plane. The juxtaposition of nerve to gland in this vulnerable region is found with sufficient frequency to demand deliberate meticulous dissection on the part of the surgeon in his

5. Blumgart, H. L.; Riseman, J. E. F.; Davis, David, and Berlin, D. D.: Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris: III. Early Results in Various Types of Cardiovascular Disease and Coincident Pathologic States Without Clinical or Pathologic Evidence of Thyroid Toxicity, Arch. Int. Med. **52**: 165 (Aug.) 1933.

6. Mixter, C. G.; Blumgart, H. L., and Berlin, D. D.: Total Ablation of the Thyroid for Angina Pectoris and Congestive Heart Failure: Results of Eighteen Months' Experience, Ann. Surg. **100**: 570 (Oct.) 1934.

7. Berlin, D. D.: The Recurrent Laryngeal Nerves in Total Ablation of the Normal Thyroid Gland: An Anatomical and Surgical Study, Surg., Gynec. & Obst. **60**: 19 (Jan.) 1935.

8. Freedman, L. M.: Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of the Thyroid: V. Importance of Laryngoscopic Examination as a Means of Preventing Bilateral Paralysis of the Vocal Cords, Arch. Otolaryng. **19**: 383 (March) 1934.

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attempt to excise every visible trace of thyroid tissue and at the same time preserve the nerve intact. At this same area the thyroid is sometimes found to be very deeply molded in the tracheo-esophageal sulcus with a definite retrotracheal extension of glandular tissue. This, of course, increases the hazard of nerve injury. In approximately 5 per cent of our operative series, such a retrotracheal prolongation of thyroid tissue was encountered.

Pyramidal Lobe. — In operating for exophthalmic goiter an enlarged hyperplastic pyramidal lobe usually can be identified with ease, and failure to remove it may sometimes account for the recurrence or persistence of symptoms of thyrotoxicosis. In surgery of the normal thyroid gland, however, this structure, sometimes referred to as the third lobe of the thyroid, is thin, much less vascularized than the hyperplastic pyramidal lobe and often effectively concealed beneath the thin stratum of deep cervical fascia. A deliberate search for its presence should therefore be made and, when found, it should be traced to its uppermost level and removed. Failure to remove an elongated pyramidal lobe may preclude the development of a persistent lowering of the basal metabolism. Without such a permanent depression in the metabolic level a successful therapeutic end result is not to be anticipated. In a previous report [9] it was noted that a pyramidal lobe was found in 35 per cent of the first sixty patients operated on.

Parathyroids.—When this problem was first undertaken we were much concerned about the development of serious postoperative tetany. McCullagh [10] in 1932 reported an incidence of tetany of 1.3 per cent following subtotal removal of the abnormal thyroid gland in a series of 11,500 operations performed at the Cleveland Clinic. Means and Richardson [11] observed that the occurrence of postoperative parathyroid tetany was roughly related to the amount of thyroid tissue removed at operation. Tetany rarely followed hemithyroidectomy and was more common following subtotal thyroidectomy of the hyperplastic gland than after the excision of an adenomatous goiter. It was feared, therefore, that total extirpation of the gland might yield a high incidence of severe tetany.

The patients and those in attendance were instructed to report the onset of numbness and tingling of the hands and feet immediately, and tests were frequently made to elicit the presence of Chvostek's and Trousseau's signs. Repeated measurements of the concentration of serum calcium were also carried out.[12]

To date not a single instance of severe tetany, such as spontaneous carpopedal spasm or convulsions, has been manifested. There were altogether fourteen patients who developed signs or symptoms of mild parathyroid insufficiency in whom at least one parathyroid gland was identified and preserved at operation. We advise against a too diligent search for these glandules away from the surface of the thyroid gland, for we attribute the symptoms of temporary impairment of parathyroid function to injury rather than to removal of these glands during operation. A parathyroid accidentally removed is reimplanted in the sternomastoid muscle.

9. Berlin, D. D., and Blumgart, H. L.: The Treatment of Chronic Intractable Heart Disease by Total Thyroidectomy, presented at the annual meeting of the New York State Medical Society, Utica, May 15, 1934.

10. McCullagh, E. P.: The Diagnosis and Treatment of Parathyroid Tetany, in Crile, G. W., and associates: Diagnosis and Treatment of Diseases of the Thyroid Gland, Philadelphia, W. B. Saunders Company, 1932.

11. Means, J. H., and Richardson, E. P.: The Diagnosis and Treatment of Diseases of the Thyroid, in Christian, H. A.: Oxford Monographs on Diagnosis and Treatment, New York, Oxford University Press, 1929, vol. 4.

12. Gilligan, Dorothy R.; Berlin, D. D.; Volk, Marie C.; Stern, B., and Blumgart, H. L.: Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris: IX. Postoperative Parathyroid Function; Clinical Observations and Serum Calcium and Phosphorus Studies, J. Clin. Investigation **13**:789 (Sept.) 1934.

POSTOPERATIVE MANAGEMENT

The immediate postoperative reaction is usually mild. Patients have regularly been able to take fluids by mouth immediately following operation and we have not had to resort to hypodermoclysis. For the first three postoperative days fluids are given to the amount of 1,500 cc. or less daily and subsequently reduced to the preoperative intake. The administration of oxygen to the occasional patient who develops dyspnea and slight cyanosis is followed by quick and striking relief.

Since the underlying cardiac lesion still exists following operation, these patients continue to demand the same careful medical supervision postoperatively that any patient with heart disease requires. Furthermore, the depressed metabolism incident to the myxedematous state must be carefully regulated. Without thyroid medication, practically all patients will eventually develop untoward symptoms and signs of myxedema. With rare exceptions the metabolism can be maintained at a level of minus 25 to minus 30 per cent by the administration of small doses of thyroid daily. At this optimum level the untoward clinical manifestations of hypothyroidism are usually controlled with the heart still released from its previous burden. In the majority of instances the administration of thyroid one-fourth grain, or 0.016 Gm. (Armour's), daily is sufficient to keep the patient in comfort. In others, one-half grain (0.032 Gm.) daily is required to maintain the desired metabolic level. The details of the medical management have been fully described elsewhere.[4]

Results from One to Two and One-Half Years Following Operation

	Angina Pectoris	Congestive Failure
Marked improvement	50%	38%
Moderate improvement	17%	31%
Slight improvement	14%	22%
No improvement	19%	9%
Number of cases	36	32

Twenty-two patients have been operated on within the last twelve months; these results are not evaluated.

RESULTS

An evaluation of the clinical results obtained in those patients who were operated on from one to two and a half years ago reveals that of thirty-six patients with angina pectoris 50 per cent have been markedly improved, as shown in the accompanying table. In this category are included patients who were previously incapacitated and were sufficiently relieved by operation so that they no longer required medication and were able to return to work. In an additional 17 per cent the attacks of coronary pain were diminished in frequency and severity. The improvement in this group is classified as moderate.

The results in patients with congestive failure are equally satisfactory. Approximately 70 per cent derived a degree of improvement which was greater than that

obtained by adequate medical therapy prior to thyroidectomy. Thirty-eight per cent of these totally incapacitated cardiac patients were markedly benefited by operation to the extent that they were able to undertake, without circulatory embarrassment, activity such as had been previously denied them. An additional 31 per cent showed a moderate increase in their capacity for work without recurrence of failure.

Approximately 30 per cent of the patients suffering from either angina pectoris or congestive heart failure showed little or no improvement following operation. The lack of improvement in this group can be attributed in most instances either to a rapid progression of the underlying disease or to an unduly low preoperative basal metabolic rate. The results of this group emphasize the need of utmost care and caution in the selection of patients for operation.

SUMMARY

1. Approximately 70 per cent of the patients with either angina pectoris or congestive failure who were operated on from one to two and a half years ago have shown marked or moderate improvement following total ablation of the thyroid gland.

2. Close cooperation between internist and surgeon is most essential. Extreme care must be exercised in the selection of patients for operation.

3. Attention is called to the danger of bilateral recurrent laryngeal nerve injury. Direct laryngoscopic examination after the ablation of one lobe of the thyroid gland is advisable as a precaution against the development of bilateral abductor paralysis.

4. The pyramidal lobe and the retrotracheal extension of glandular tissue in the region of the adherent zone must be carefully dissected and excised to effect a total extirpation of the gland.

5. The absence of operative mortality in the last sixty-two patients submitted for operation is attributed to increased experience in medical management, improvement in surgical technic, and the use of local anesthesia.

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ABSTRACT OF DISCUSSION

DR. JOHN HEPBURN, Toronto: Our results at the Toronto General Hospital agree with those of the author in that in careful hands tetany need not be feared. These patients will not stand the enormous deluge of fluids which too many surgeons appear to think all postoperative cases require. In a small series of cases treated more than a year ago, two groups of patients were selected: 1. Patients totally incapacitated because of anginal attacks. They are all alive and improved in varying degrees. The most severely ill patient had been in bed for nine months, receiving morphine up to 1½ grains (0.1 Gm.) daily before the operation. He is now able to walk six or eight blocks several times a day and takes no sedative. 2. Patients with marked congestive failure, which persisted in spite of prolonged bed rest, diuretics and restricted fluids. One patient died as the result of the operation or anesthetic; one or two others improved greatly for a time; others did not improve, and all are now dead. We have had no experience with cases of recurrent failure which clears up readily on rest. Several interesting points have emerged from this work: First, only a tiny dose of thyroid extract is needed to raise the basal metabolic rate from 10 to 15 per cent and to clear up the disagreeable symptoms of myxedema; secondly, no one has adequately explained why angina decubitus as a rule disappears on the day of operation; thirdly, two of our anginal patients, whose preoperative basal metabolic rate was minus 15 per cent, improved definitely following the operation without any further lowering of the metabolic rate. Every patient should be carefully selected by a competent cardiologist and advised to have this operation if totally incapacitated by angina or, judging by Dr. Berlin's results, if failure recurs on assuming light duties, in spite of adequate medical attention, but not to be operated on if failure resists medical treatment.

DR. DAVID D. BERLIN, Boston: The important problem of the selection of patients for operation and the various surgical pitfalls have all been outlined in detail in previous communications. I have never submitted any patient to this operative procedure without first knowing that all available medical measures have already been applied and proved unsuccessful. I believe that the disappearance of angina decubitus on the day of operation can be explained on the basis of sensory nerve interruption during operation. I have noted this phenomenon immediately following operation on the corresponding side of the removed lobe of the thyroid. Dr. Hepburn referred to patients who were improved with no lowering of the basal metabolic rate. The early relief that comes following resection of the sensory nerves in the course of total thyroidectomy may last anywhere from six weeks to about three months. Beyond this period, the degree of improvement following operation has in my experience uniformly paralleled the fall in the basal metabolism. Conservatism has been the keynote throughout this investigation. Many more patients have been rejected than have been selected for this operative procedure. Dr. Herrman L. Blumgart, under whose direction this investigation has been conducted, will frequently call a halt to the procedure for careful reflection and critical appraisal of the results.

SUBJECTIVE MENTAL AND PHYSICAL REACTIONS TO A FREE FALL IN SPACE

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DAYTON, OHIO

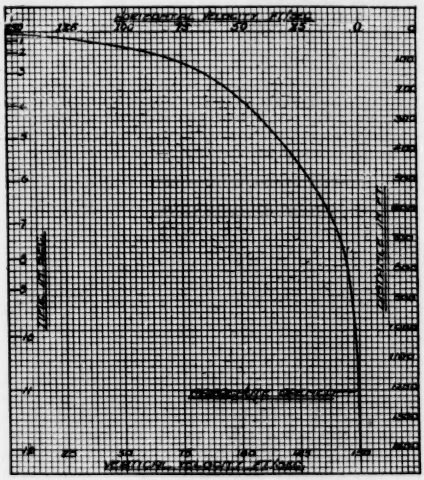
Until recent years a free fall in space of any considerable distance was always the result of either an accident or an attempt at self destruction. Since these falls invariably ended in instant death, it was impossible to get any information as to the subjective sensations experienced. It was assumed that a fall of more than 100 feet produced unconsciousness, and it was even thought by some that death occurred before the ground was reached.

The development of the parachute and its use by aviators exploded these theories and it was soon established, by accident at first, that a free fall in space produces neither unconsciousness nor death. This fact was capitalized by individuals who made delayed parachute jumps as an exhibition before public gatherings. Other delayed parachute jumps have been made unintentionally in which the jumper had difficulty locating his ripcord or other similar troubles. Unfortunately, the subjective mental or physical reactions that occurred in any of these jumps was never recorded.

That an exact knowledge of these reactions is of considerable practical importance is evidenced by the following considerations:

Fear of falling is one of the strongest inherited and acquired self-preservative instincts of man. It is one of the two external factors that produce evidences of fear in new-born infants. This fear is the source of many fatal aircraft accidents, for the following reasons: Many airmen choose to stay with a disabled ship and crash rather than take to their parachutes and face the unknown. Others who take to their parachutes cannot

resist the fear of a short free fall, pull their ripcord too soon, become entangled with the airplane, and are dragged to destruction. A second situation that calls for a delayed parachute opening is in those cases in which a jump is made from a disabled ship which travels in a circle and collides with the jumper. At other times it is possible to avoid colliding with other jumpers by a suitable delay. Many avoidable accidents have been caused in the past by both these occurrences. The third situation that requires a delayed parachute opening is a jump from extremely high altitudes. It is necessary on altitude flights to use oxygen, since anoxemia begins to develop at about 10,000 feet, producing dyspnea at 15,000, unconsciousness at about 22,000 and death at about 27,000. If it should be necessary to make a parachute jump from 30,000 feet or above, one would not only abandon the airplane



Calculated path and rate of fall.

but also one's oxygen supply. Were the parachute opened at once, unconsciousness or even death might occur before the relatively slow descent carried the jumper to the lower altitudes where the oxygen pressure is sufficient to maintain life. On the other hand, a free fall from 30,000 feet to 15,000 feet would require only about one and one-half minutes, which is less time than is necessary to develop extreme oxygen want.

The next situation to be considered applies only to military aviation. Here a ship, disabled in combat, may require its occupants to take to their parachutes. These individuals then become easy prey to enemy airmen and are helpless to resist as they float to earth. Their only defense is a strategic quick retreat downward, using the speed and the time element of a free fall to escape.

The last situation to be discussed is of quite recent origin and has developed as a result of modern aircraft performance. Our present parachutes presume a velocity of about 175 feet per second, or 119 miles per hour, at the time of opening. At that speed the parachute functions smoothly, no undue stresses are set up in either the fabric or the harness, and the opening shock to the jumper is not normally sufficient to produce injury. However, when a man jumps from a modern airplane traveling 250 miles per hour, or one in a dive going 360 miles per hour, he is for a few seconds traveling in the same direction and at the same speed as the ship. If he should open his parachute at that moment, it can be easily seen that at 360 miles per hour the stresses on the parachute and on the jumper are tripled. This unusual force has, in at least one instance, broken both leg straps and the breast strap of a service type parachute harness and only the arm loops prevented the pilot from falling to his death. Since the terminal maximum velocity of a human free fall in space is only 175 feet per second, or about 119 miles per hour, it is evident that with a sufficient delay one would actually decelerate from say 360 miles to 120 miles per hour, at which time a safe parachute opening could be made.

OBJECT

The object of this experiment was to (1) determine the subjective mental reactions to a free fall in space, (2) determine the subjective physical sensations to a free fall in space, (3) observe any unusual phenomena incident to a free fall in space, and (4) test the practicability of utilizing delayed parachute jumps as a safety measure.

EQUIPMENT

The jump was made from the rear cockpit of a two-seated biplane. Two standard U. S. Army Air Corps parachutes were worn, one a 28-foot seat-pack training type, the other a 22-foot emergency type worn on the abdomen. A summer flying helmet covered the head, but goggles were not used.

PROCEDURE

The airplane was flown on a straight and level course at 2,200 feet and at an air speed of 119 miles per hour over a given point on the terrain. At a prearranged signal from the pilot, as this point was crossed, I made the jump in the following manner: Standing on the seat of the rear cockpit facing the right side of the airplane, I placed the left foot on the edge of the cockpit, grasped the ripcord of the training parachute with the right hand, and grasped the back of the pilot's seat with the left hand for balancing. The upper part of the trunk was thrown forward and downward, and as the body reached a horizontal position a strong thrust was given with the left leg. This resulted in a slow tumbling fall, the body making one complete revolution every two seconds. During the second and third revolutions of the body, the eyes were voluntarily closed and at the end of that time again opened. Careful note was made of all mental and physical reactions and sensations until the 1,000-foot limit was reached, at which point the ripcord of the training parachute was pulled and the remaining distance traversed with the parachute open. Two attendants on the ground timed the free fall and from this and a series of photographs calculated the distance of fall.

THEORETICAL CONSIDERATIONS

From a series of interesting experiments [1] with dummies conducted by the Materiel Division, Air Corps, it has been found that "a man equipped with a para-

1. Determination of the Rates of Descent of a Falling Man and of a Parachute Test Weight, Air Corps Information Circular, vol. VII, No. 628, Nov. 24, 1928.

chute pack, but allowing it to remain closed, will fall at a maximum rate of between 160 feet per second (109 m. p. h.) and 175 feet per second (119 m. p. h.) and that he will gain this velocity in about 12 seconds time, having fallen 1,400 to 1,500 feet." The differences in the terminal velocities were determined to be due to the fact that a tumbling body falls slower than one that falls straight. It was also noted that "the velocity which the airplane imparts to a body diminishes as the velocity, due to gravity, increases, so that the resultant acceleration is not very great. If a man would jump from an airplane which is traveling at 120 m. p. h. he would maintain very closely that same speed until he reached the ground or opened his parachute. If he left the airplane while traveling at a speed greater than 120 m. p. h., his speed would rapidly diminish to that amount."

Applying these data to the case under consideration, it may be calculated that the initial velocity was 175 feet per second (119 miles per hour) in a horizontal direction with a terminal velocity of about 149 feet per second (102 miles per hour) in a vertical direction. The time of fall being eleven seconds, the distance (vertical) was approximately 1,200 feet. The probable path and rate of fall is shown in the accompanying chart.

RESULTS

To evaluate properly the reactions experienced in this experiment, it is necessary to consider first the physical and mental state during the few seconds preceding the jump. The predominant mental factors at that moment were fear and excitement. The fear was from an irrepressible self-preservative instinct, partly due to the instinctive fear of falling and partly to an acquired fear of fouling the airplane, having a defective parachute or being injured in a faulty landing. The excitement was the result of participating in an undertaking of some danger without previous experience and with unknown consequences.

The other mental attributes were essentially normal, consciousness was unclouded, perception was clear and ideation was rapid, although perceptibly influenced by the excitement.

The physical sensations were normal under the circumstances, the roar of the motor, the sight of the ground below, the roar of the wind past the head and the irritation of the eyes from the slipstream were all true to previous experience. There was no vertigo or nausea, nor loss of spatial or postural sense. The breathing was regular but difficult, owing to the wind blast from the propeller. The heart beat and other bodily processes were not consciously perceptible.

The normal or at least initial state having been established, the reactions of the free fall may now be described.

1. *Mental Reactions.*—Throughout the free fall, all conscious mental processes seemed normal. As soon as the airplane was cleared, fear and excitement disappeared.

Consciousness was unclouded and ideation was rapid, precise, penetrating and clear.

Perception of an auditory nature may or may not have been impaired. While twelve airplanes were in close proximity to the point at which the jump was made and one of these circled close to the line of fall, no airplane noise can be recalled. Also it was expected that the rush of air past the ears would produce considerable sound, yet none was noted. Whether this loss of auditory perception was functional, due to lack of attention or because of atmospheric conditions, is not definitely known. I believe, however, that the latter is the most likely explanation and will discuss it more fully later.

Visual perception was normal. The earth, objects and individuals below and the sky above were normally visible.

There were no consciously perceptible heart beats or other bodily processes.

Probably one of the most interesting observations was in regard to the perception of position and motion in space. It will be recalled that at the moment of jumping the earth was in full view. For the first second of fall there was a horizontal velocity of about 175 feet per second, and a vertical acceleration had been reached of about 16 feet per second. At the same time there was a tumbling motion of the body making a complete revolution in about two seconds. Of all these motions, acceleration and deceleration, the only one recognized was rotation of the body.

During the second second of fall, the horizontal velocity had decreased to about 120 feet per second and the vertical acceleration had increased to about 24 feet per second and still there was no conscious realization of any movement except the body rotation.

During the third and fourth seconds, the eyes were voluntarily closed and during that time all sense of motion was lost. Here, not only were the linear velocities and accelerations and decelerations, both horizontal and vertical, imperceptible but also the previously recognized body rotation. In short, the sensation was that of being suspended at rest in midair.

When the eyes were opened, which was at an altitude of about 1,900 feet, and the ground again sighted, it was then noted that there was for the first time a definite sensation of falling. This sense of fall increased rapidly and at the moment the parachute was opened, at an altitude of 1,000 feet, there was fully perceptible vertical velocity. A lengthy discussion of this phenomenon is not within the scope of this paper. I may say, however, that it lends strong support to the recent theory that the eye and not the ear is the predominant organ in determining spatial position and relationships.

The increased sense of motion (falling) as the ground was approached is readily explained by a normal lack of sufficient depth perception acuity at high altitude to recognize the shortening of the distance to the earth. As the fall continued, of course, the shortening of the distance became more readily recognizable and the sense of falling increased.

2. *Physical Sensations.*—The period of free fall was remarkably free from abnormal physical sensations. There was no nausea or vertigo, although I am quite susceptible to both from any swinging, tumbling motion, or disorientation. In this case the lack of a distinct sense of motion may have been a factor.

There were no abnormalities noted in the cardiovascular system.

There was none of the empty or "gone" feeling in the abdomen so common in elevators and in airplanes.

The eyes, although unprotected from the high wind blast, were not irritated and vision was normal.

Breathing was even, regular and undisturbed. The latter is noteworthy and contrary to expectations, as it is a common experience to have the breath "taken away" by a stiff wind about a street corner. All

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together, the undisturbed breathing, the unirritated eyes and the apparent loss of hearing bring up an interesting speculation.

What explains these three unusual phenomena, which are so contrary to expectations and previous experience? The opinions of airplane designers and wind tunnel experts differ. Some suggest a turbulent airflow about the body, producing small eddies and air currents instead of a strong blast. Others suggest that the body acts as a fairly good airfoil, the downward portion of the body acting as a leading edge and the upward part as a trailing edge, with a smooth, even flow of air over the surface. Still others suggest that there is a static air condition surrounding the body so that there is no flow of the air in contact with the body and that the pressure in the static area is a partial vacuum. Whatever the explanation, it no doubt has to do with the airflow about the body, and this fortunately is such that a perfect atmospheric environment is created.

The last phenomenon to be described is the only positive physical finding and is difficult of accurate description. It has to do with skin sensibility and was a result of the increased air pressure on the lower surface of the body. It consists of that force which restricts terminal velocity to 119 miles per hour instead of infinity and appears in consciousness as a very gentle, evenly distributed, generalized, superficial pressure on the surface of the body toward the earth. The nearest possible similar earthly experience is that of being lowered slowly into a great bed of softest down.

CONCLUSIONS

From a study of the subjective reactions to a free fall of approximately 1,200 feet in space, made by means of a delayed parachute jump, it may be concluded that:

1. In a free fall in space the mental reactions are normal, except as influenced by fear, excitement or other factors not attributable to the fall per se.

2. In a free fall in space there is produced only one abnormal physical sensation and this consists of a very gentle, evenly distributed generalized, superficial pressure on the downward surface of the body.

3. There is an apparent diminution of hearing acuity from an undetermined cause.

4. Position in space and motion through space are recognized solely by means of vision.

5. Depth perception acuity is such that a speed of approximately 100 feet per second at a distance of 1,900 feet from an object is required to recognize motion toward that object.

6. Delayed parachute jumps are an entirely practical means of avoiding certain highly hazardous aerial situations.

Wright Field.

Quiet Walking.—In the management of a case of gradual heart failure, overexertion is to be particularly avoided and the patient should not do more than he can do without getting out of breath; for the myocardial cases particularly it may be said that he should "never walk when he can ride, never stand when he can sit and never sit when he can lie," but quiet walking on the level, if it can be done without breathlessness, may be helpful.—Dr. Robert Hutchison, quoted by Fisher, Alexander: Aphorisms in Clinical Medicine. *Canad. J. Med. & Surg.* **77**:166 (June) 1935.

Clinical Notes, Suggestions and New Instruments

PRIMARY SARCOMA OF PERICARDIUM

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Although the number of authenticated case reports of primary tumors of the heart and pericardium now approximates 200, the number of primary sarcomas of the pericardium described in the literature is still small. Yater,[1] writing in 1931, collected reports of ten cases of primary sarcoma of the pericardium. The present case adds one more to the literature.

Pericardial sarcomas may be divided into two general groups, the one, such as that described by Williams,[2] being limited to the pericardium without invasion of the heart; the other, such as that described by Hill,[3] infiltrating the heart tissue. The case to be reported is of the former type. A review of our case with the changes found at necropsy is given here.

Fig. 1.—Section of heart showing pericardial tumor compressing myocardium. Note nodular character of tumor and areas of necrosis and hemorrhage.

REPORT OF CASE

History.—C. F., a white man, aged 47, admitted to the Medical Service of City Hospital, March 1, 1933, complained chiefly of shortness of breath. He was in good health up to four months before admission, when a cough and general malaise developed. A physician whom he consulted at that time told him he had influenza. In a few days he felt better and returned to work as a machinist. One month previous to admission he again noticed shortness of breath on exertion, and a nonproductive cough developed which grew progressively worse. The patient also had attacks characterized by palpitation, dyspnea and a sensation of everything turning black before his eyes,

From the Medical Clinic of Western Reserve University at Cleveland City Hospital.

1. Yater, W. M.: Tumors of the Heart and Pericardium, Arch. Int. Med. **48**: 627 (Oct.) 1931.
2. Williams, J. C.: New York M. J. **71**: 537, 1900.
3. Hill, Herbert: Primary Round Cell Sarcoma of Pericardium Arch. Path. **5**: 625 (April) 1928.

which lasted from two to three minutes. There was no swelling of the ankles or abdomen. Thirty years previously the patient had a penile sore, which was treated with several intra-urethral injections. There was no history of rheumatism. He used alcohol and tobacco moderately.

Examination.—The patient was sitting up in bed and was apparently acutely ill. There was pallor and cyanosis of the skin and lips and he was markedly dyspneic. The pupils were equal and reacted to light. The retinas were normal. The thyroid gland was not enlarged. The veins of the neck were engorged and showed vigorous pulsations. There was dulness to percussion and diminished breath sounds at the left base, and a few moist râles were heard at the right base. Over the precordium was diffuse cardiac activity. The point of maximum impulse was feeble, located 13 cm. from the midsternal line in the fifth interspace. The left border of cardiac dulness was in the anterior axillary line. The first heart sound at the apex was impure and suggested a split sound. No cardiac murmurs were heard. The blood pressure was 120 systolic, 90 diastolic. The rate was about 120 per minute and regular, except for occasional runs of extrasystoles. The liver was tender and the edge was palpable four fingerbreadths below the costal margin. There was no ascites or edema of the ankles. No penile scar was found.

Laboratory examinations revealed the following:

The urine was normal.

A blood count showed: red blood cells, 3,400,000; hemoglobin, 60 per cent, and white blood cells, 9,200. The Wassermann reaction of the blood was negative.

Nine hundred cubic centimeters of fluid was removed from the chest. It was a clear amber, with a specific gravity of 1.015 and contained many red blood cells, white blood cells and a few endothelial cells. Culture showed no growth.

The electrocardiogram (fig. 2) showed a normal mechanism, with auricular and nodal extrasystoles. There was an inverted T wave in leads 1 and 2.

X-ray films of the chest (fig. 3) and fluoroscopic examination of the heart showed a tremendous bag-shaped enlargement of the heart. The left ventricular region extended almost to the lateral wall of the chest. The pulsations of the heart were very superficial. There was a slight amount of fluid and thickened pleura at the left base.

Clinical Course.—The patient had a daily elevation of temperature to from 38.5 C. to 39 C. (101.3 F. to 102.2 F.). The heart rate remained at about 120 per minute except for runs

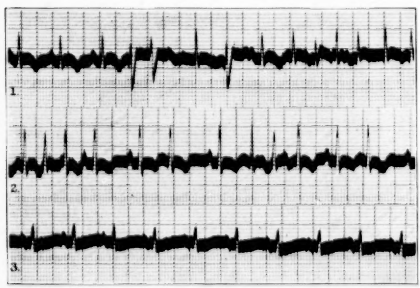

Fig. 2.—Electrocardiogram taken March 4, 1933, showing normal mechanism, auricular and nodal extrasystoles, and inverted T wave in leads 1 and 2.

of extrasystoles, when it went to as high as 150 per minute. The respiratory rate continued at about 30 per minute.

The patient grew progressively weaker and more dyspneic. On the sixth hospital day he complained of marked shortness of breath and a sudden sharp pain in the left arm. The arm became swollen. He died a few hours later on the seventh hospital day.

Anatomic Changes.—The autopsy was performed a few hours after death. When the thorax was opened the pericardial sac presented a large mass, having grossly the contour of the heart and measuring 25 by 19 by 13 cm. This mass was nodular, rubber-like in consistency and weighed 2,450 Gm. in all. On section (fig. 1) the heart was seen to be entirely surrounded by tumor tissue, which extended from the myocardium outward, obliterating the pericardial sac and being intimately attached to the pericardium. The width of the tumor tissue measured from 1 to 5 cm. It was made up of multiple grayish nodules measuring from a few millimeters to 5 cm., which were soft and spongy and showed many areas of necrosis and hemorrhage. The tumor compressed the myocardium from without but nowhere definitely invaded it. The tissue surrounded the pulmonary artery and ascending thoracic aorta.

Fig. 3.—Roentgen appearance of chest showing marked enlargement of heart shadow with irregularity of border, caused by tumor nodules.

On microscopic section the tumor tissue was seen to consist for the greater part of moderate sized discrete cells with an oval chromatic nucleus having a scant rim of acidophilic cytoplasm. There was a stroma of short, thin acidophilic fibers, which tended to form a reticulated architecture. In places the tumor cells tended to form whorls or nests of cells and occasionally the cells were elongated and suggested an interlacing architecture. Areas of necrosis and hemorrhage were scattered throughout. Here and there were thin vessels, a few of which showed a perivascular arrangement of the tumor cells owing to surrounding necrosis. The epicardium was involved by the tumor tissue and the myocardium was compressed but not invaded. The microscopic diagnosis was sarcoma of the pericardium.

Other pathologic changes were thrombosis of the pulmonary vessels, infarct of the right lower lobe, left hemothorax, chronic passive congestion of internal organs, and cholelithiasis. There were no metastases from the primary tumor.

13224 Shaker Square.

COMPLETE LATERAL DISLOCATION OF THE KNEE JOINT

A. M. FICHMAN, M.D., FORT WAYNE, IND.

Complete lateral dislocation of the knee occurs rarely. The knee is the largest and strongest hinge joint of the body and is held in place by internal and external supporting structures. The former consist of the anterior and posterior cruciate and the coronary and the transverse ligaments. The latter include the fibrous expansion of the quadriceps extensor tendon, the ligamentum patellae, the posterior (oblique popliteal) ligaments, the capsular ligaments and the external lateral and internal lateral ligaments. The literature is almost devoid of case reports for complete lateral dislocation of the knee joint.

By complete dislocation of a joint is meant a disassociation of joint surfaces in which the opposing articular surfaces are no longer in apposition or in contact at any single point.

Huber and Yaffe [1] in their report of a case of anterior dislocation of the knee joint state that "lateral displacements are more infrequent." Longeway and Richardson [2] in their report of complete dislocation of the knee state that the "x-ray showed external condyle of femur resting on extreme edge of internal articular surface of tibia"; thus this case does not conform to

Presented before the Fort Wayne Medical Society, March 4, 1935.

1. Huber, H. H.; Yaffe, Aaron, and Podlasky, H. B.: Traumatic Dislocation of the Knee Joint, Radiology **7**: 431-435 (Nov.) 1926.

2. Longeway, A. F., and Richardson, R. B.: Report of a Case of Complete Traumatic Dislocation of the Knee Joint Without Compounding, Journal-Lancet **51**: 120-122 (Feb. 1) 1931.

the definition of complete dislocation. Stellhorn [3] reported a case of complete anterior dislocation of the right knee. Ritter [4] failed to find a single case among 23,000 accident cases at the Reconstruction Hospital.

REPORT OF CASE

L. N., a white man, aged 75, 5 feet 11 inches (180 cm.) tall, weighing about 190 pounds (86 Kg.) and well preserved for his age, was brought to the hospital on the night of Jan. 11, 1935, immediately after being struck by an automobile. He was

Fig. 1.—Anteroposterior view of complete lateral dislocation of the right knee.

struck on the right side of the body by the fender or head light and was thrown to the pavement, but the machine did not pass over his body.

On examination the patient was semiconscious, with an extensive laceration on the scalp over the right temporal region and a friction abrasion of the right side of the face. The right knee was twice the width of the left knee. The distal end of the femur was on the medial side of the tibia. The condyles of the femur and the intercondylar notch could be made out on inspection and easily palpated under the overlying skin. The skin over the femoral condyles was stretched very tight and appeared about to break. The proximal end of the tibia was shoved up for about 2 inches along the lateral side of the femur, and the patella could be palpated along the lateral side of the femur and about 3 inches above the femoral condyles. The foot was warm and normal in color and there were no signs of injury to the popliteal vessels and nerves. The right lower extremity was 2 inches shorter than the left. The rest of the physical examination was negative. It was apparent that the patient was struck on the side of the right thigh just above the knee, while the leg was in extension and bearing weight; otherwise the tibia would not have occupied the position that it did. The roentgen examination was in accordance with the physical examination, that of a complete lateral dislocation of the right knee (fig. 1).

Under ether anesthesia and with the patient lying on his back on the operating table, the dislocation was reduced in the following manner: With the affected leg under my right arm so that the dorsum of the foot was against the back of my shoulder, and the calf of the leg grasped in my right hand, I used my body as traction and the right hand to grasp the calf of the leg for guidance. With the left hand placed over the knee and with counterclockwise motion and pressure so that the palm of the hand pressed downward on the tibial tuberosities and the fingers pushed upward on the femoral condyles, the dislocation was easily reduced. A posterior splint was applied and bandaged rather snugly. The scalp wound was cleansed and sutured, and the patient returned to bed. He made an uneventful recovery and did not require morphine at any time.

On the tenth day after the reduction, the posterior splint was removed; there was practically no swelling about the knee, and passive motion was started. By the fourteenth day he was allowed to be up, with the splint in place, and with the aid of crutches he was able to bear practically his whole weight on the affected leg. He was sent home, a distance of 120 miles from here, with a letter of instructions to his family physician to remove the splint three times a week for passive and active motion and gradually to increase the motion to the point of tolerance, and to prescribe the wearing of a mobile knee brace. A communication received from the family physician, March 2, seven weeks after the injury, stated that the patient was able to extend and flex the knee to a 90 degree angle, voluntarily, without any difficulty, and that he was allowing the patient to walk about the house with the aid of crutches. It was planned that the patient wear a mobile brace about the knee until the joint was stable.

COMMENT

The question arises whether this patient should have been operated on and an attempt made to suture the cruciate ligaments, the external lateral and internal lateral, which undoubtedly were torn in this complete evulsion of the knee joint. No doubt there are some who strongly advocate this procedure, and perhaps they are right. Again there are others who strongly urge that complete immobilization be continued for a long period of time. With the results obtained in this case so far, would the foregoing two procedures be justifiable?

Fig. 2.—Anteroposterior view after reduction.

Fig. 3.—Lateral view after reduction.

Sir Robert Jones [5] emphasizes long immobilization. Platt [6] followed a long immobilization treatment in two cases of anterior dislocation of the knee and obtained 20 degrees of flexion after eleven months and 90 degrees of flexion after four years.

3. Stellhorn, C. E.: Complete Dislocation of the Knee Joint, Am. J. Surg. **26**: 332-333 (Nov.) 1934.
4. Ritter, H. H.: J. Bone & Joint Surg. **14**: 391-394 (April) 1932.
5. Jones, Robert: Disabilities of Knee Joint, Brit. M. J. **2**: 169 (Aug. 5) 1916.
6. Platt, H.: Traumatic Dislocation of the Knee Joint, Brit. J. Surg. **8**: 190-192 (Oct.) 1920.

Joseph I. Mitchell[7] in a case of posterior dislocation of the knee reduced by open operation, excised the cruciate ligaments and the wound was closed in layers. The knee was immobilized for one month and was followed by the wearing of a brace with motion at the knee, for a comparatively short period; he obtained a stable, good weight-bearing alinement, and the patient could walk without support. In three cases of anterior dislocation of the knee, reduced by the closed method, he obtained good stable knees in all three with comparatively short periods of immobilization. In one the immobilization was for two weeks before active motion started, and in three months a good stable joint was obtained. In the second the immobilization was for several weeks, and the functional result was excellent. In the third the immobilization was for six weeks, and a stable joint was obtained.

404 Cal-Wayne Building.

ABSCESS OF THE PLACENTA CAUSING ABRUPTIO PLACENTAE

SAMUEL S. ROSENFELD, M.D., NEW YORK

Abscess of the placenta is a rare condition. Some of the well known textbooks on obstetrics do not even mention the condition, and those that do simply state that it may occur. Williams believes that practically all the cases designated as abscess of the placenta are in reality degenerated remains of

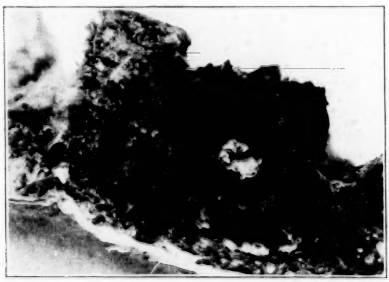

Fig. 1.—Gross appearance showing cross section of placenta through area of hemorrhage, in the center of which an abscess cavity is seen. The neighboring placenta to the left appears normal.

deeply seated placental cysts, "the grumous material" of the older writers.

This case is reported because there is unmistakable pathologic proof of the presence of an abscess of the placenta. The fact that this abscess was in immediate proximity to the site of hemorrhage makes me reasonably certain that it was responsible for the premature separation of the placenta.

REPORT OF CASE

Mrs. C. H., aged 24, white, a housewife, who was born in the United States, had diphtheria when she was a child. Her periods began at the age of 13, are regular and last four days, and the flow is scanty. There were no abortions or miscarriages. She was delivered six and one-half years before of a normal child by forceps, in an uneventful pregnancy.

Her last regular period was on May 28, 1934. The urine and blood pressure were normal until the day of admission to the hospital. Her diet throughout was liberal and included cod liver oil, viosterol and calcium. There were two occurrences of possible etiologic significance during this pregnancy. While driving an automobile she skidded into a trolley pole. She apparently sustained no injury for she neither stained nor bled, nor did she find it necessary to notify me or go to bed. About a month before her admission to the hospital she began to complain of pain in the jaw at the site of a partly erupted wisdom tooth which may have been infected.

7. Mitchell, J. I.: Dislocation of the Knee, J. Bone & Joint Surg. **12**: 640-646 (July) 1930.

On the morning of Feb. 4, 1935, she experienced severe pain in the right side of the abdomen. She was admitted to the Royal Hospital and on reaching there I found her in terrific pain. She was bleeding profusely. The urine showed four plus albumin and the blood pressure was 140 systolic, 90 diastolic. The hemoglobin was 60 per cent (Dare), and the red blood cell count was 3,500,000. The pulse rate was 100. The uterus was tetanically contracted, ligneous and very tender. The fetal heart could not be heard.

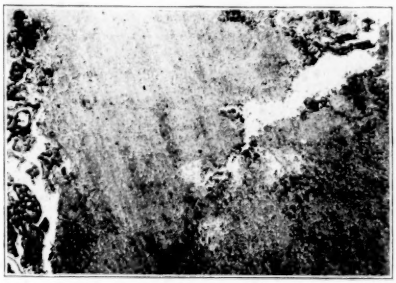

Fig. 2.—Abscess under low power showing central cavity and wall consisting of fibrin and leukocytes and degenerated placental tissue.

She was given morphine, the membranes were ruptured and this was followed by a dose of solution of pituitary. The vagina was tightly packed with iodoform gauze. She delivered spontaneously in about two hours. The child was still-born. The placenta followed within a few moments.

The placenta was approximately normal in size. On the maternal surface there was a very large soft blood clot. On the fetal surface there were many small cysts. The entire placenta was riddled with infarcts. Directly beneath the blood clot an abscess was found measuring about 1 cm. in diameter. A thick pus exuded from this which on smear showed gram-positive cocci and numerous degenerated leukocytes. Dr. Joseph C. Ehrlich, the pathologist, reported the following microscopic changes: The placenta showed very marked congestion of villous capillaries with areas of hemorrhage. In the center of

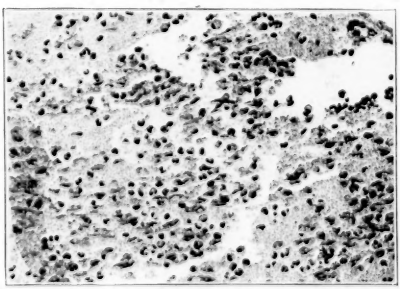

Fig. 3.—High power field near center of abscess showing fibrin, platelets and polymorphonuclear cells. Many of the polymorphonuclear leukocytes are degenerated.

the section there was a circumscribed accumulation of purulent material consisting chiefly of fibrin and polymorphonuclear cells. In the vicinity of the abscess, extensive hemorrhage was present. An autopsy performed on the fetus failed to reveal anything pathologic.

Except for a furuncle of the right external auditory canal, the patient made an uneventful recovery. On discharge from the hospital the blood pressure was 126 systolic, 80 diastolic, and the urine showed one plus albumin.

One can only speculate on the origin of the abscess. There might have occurred a slight separation with slight bleeding at the time of the automobile accident, with subsequent infection of the hematoma either by extension upward through the cervix or from the oral cavity through the circulation. Then again, infection might have taken place without any relationship or connection with bleeding or separation.

1882 Grand Concourse.

Special Article

ACUTE EMPYEMA IN CHILDREN

CLINICAL LECTURE AT ATLANTIC CITY SESSION

J. M. MASON, M.D.
BIRMINGHAM, ALA.

In October 1934 I [1] reported at the meeting of the Southern Medical Association on a series of 103 patients with empyema from the Children's Hospital and from the pediatric service of the Hillman Hospital, seen between Jan. 1, 1929, and Oct. 1, 1934. Ninety of these were treated surgically, with a mortality of 8.8 per cent. Since then (to June 1, 1935) thirteen additional patients have been treated with no fatalities, so that the mortality in the present series of 103 cases is 7.76 per cent.

In 1929 I [2] reported on a series of forty cases from the Children's Hospital with a mortality of 15 per cent.

During the periods covered by these reports there have been no unusually severe epidemics of respiratory disease. Between 1929 and 1935 approximately the same number of patients (from seventeen to twenty) have been admitted each year. The admissions have climbed steadily from October to April and then have as steadily declined, with no patients appearing in July and September, and only four being admitted in the month of August for the entire period of six years.

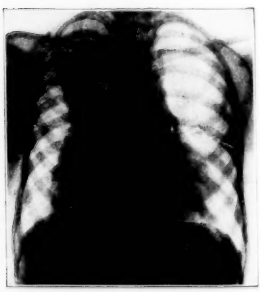

Fig. 1 (case 1).—Condition on admission. The broad shadow is continuous with that of the heart. An encysted empyema cavity is located at the apex of the right lung.

The lowered mortality in the more recent series is attributed to a clearer understanding of the treatment of the disease rather than to the presence of a less virulent organism.

During the period covered by these reports, I have also had the opportunity of treating and observing many adults with empyema. My observations in these parallel cases convince me that undue stress has been placed on the treatment of empyema in children, thereby tending to create the impression that the same surgical principles recognized as applicable to adults, namely, efficient drainage instituted at the proper time and maintained throughout convalescence, must in the case of children be waived in favor of measures less definitely curative.

While my paper deals with empyema in children, it is presented with the somewhat paradoxical purpose of maintaining that the same rules should govern the treatment of the disease whether in children or in adults.

The high mortality among very young children may be attributed to the fact that they have not sufficient strength to resist any unusual demands that may be made on them and to the many and serious complications, aside from empyema, that develop during the course of acute respiratory infections. When these complications are under control or have been properly dealt with, the treatment of empyema in the infant should follow the same rules that are applied to the adult. Hence I take issue with those who would withhold operative treatment from very young children, and I do not hesitate to perform open thoracotomy at the proper time without fear of an unfavorable outcome attributable to the operation.

Fig. 2 (case 1).—Tubes are shown in three separate empyema cavities.

Any comprehensive discussion of empyema divides itself into three phases: (1) a consideration of the practices that obtained previous to 1918 and during the early period of the invasion of the troops by empyema during the World War, (2) the practices which were developed during the prevalence of that epidemic and which have since been followed and (3) certain practices that have claimed attention in more recent years.

The great lessons from the first phase were that an early open operation in a case of acute empyema is contraindicated and that the course in cases of empyema caused by the pneumococcus differs greatly from that in cases resulting from infection by the streptococcus.

Discussions during the second phase were devoted largely to the relative merits of open and closed methods of operation.

The third phase has been concerned with a consideration of the numerous schemes and devices that have been introduced for the purpose of improving the operative technic, and also with an evaluation of certain practices long fallen into disuse but lately revived; namely, the cure of empyema by aspiration, either alone or in combination with the replacement of air or chemical irrigations and instillations.

I have followed with keen interest the reintroduction of these latter measures and have studied with care the admirable and unbiased reports of McEnery and Brennemann [3] on the treatment by repeated aspirations, and of Danna [4] on treatment by aspiration and replace-

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1935.

From the surgical services of Drs. W. Earle Drennen, S. L. Ledbetter Jr. and J. M. Mason, Children's Hospital; and of Drs. J. M. Mason, division A, and D. S. Moore, division B, Hillman Hospital.

1. Mason, J. M.: Empyema in Children, South. M. J. **28**: 219 (March) 1935.

2. Mason, J. M.: Observations on a Series of Forty Cases of Empyema in Children, Tr. South. S. A. **42**: 348, 1929.

3. McEnery, E. L., and Brennemann, Joseph: Aspiration in the Treatment of Empyema in Children, with a Critical Evaluation Based on Ninety-Four Cases, Am. J. Dis. Child. **44**: 742 (Oct.) 1932.

4. Danna, J. A.: The Treatment of Empyema by Aspiration and Air Replacement, Without Drainage, J. A. M. A. **96**: 1453 (May 2) 1931.

ment of air, and have noted the results obtained, principally by foreign investigators, with aspiration followed by instillations of ethylhydrocupreine.

Without offering any criticism concerning the added value of replacement of air or chemical instillations following aspiration, I would direct attention to a discussion of these points by McEnery and Brennemann [3] in which they questioned the benefits of these measures and claimed a lower mortality by aspiration alone than from the addition of either air or chemicals.

Any proposed method of treatment of empyema should meet three main requirements: It should promise a reduction in mortality, a shortening of the period of convalescence and a reasonable certainty of cure.

In meeting these demands, methods of aspiration, even in the hands of their most expert and enthusiastic supporters, fall far short of operative treatment. Many reports show a lower operative mortality than that obtained by aspiration.

With aspiration and replacement of air, Danna [4] reported thirty-five cases among patients of all ages, with a mortality of 5.7 per cent.

With aspiration followed by instillations of ethylhydrocupreine Woringer [5] reported thirty-six cases, with a mortality rate of 16.7 per cent.

With aspirations alone, Ochsner and Gage [6] reported twenty-six cases, all in persons over 11 years of age, with a mortality of 10.5 per cent; Strong [7] reported thirty-seven cases in children, with a mortality of 8 per cent, and McEnery and Brennemann [3] reported ninety-four cases in children, with a mortality of 12.8 per cent.

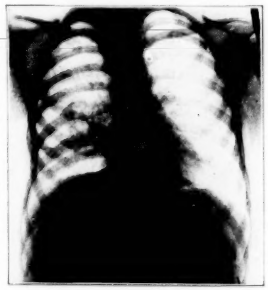

Fig. 3 (case 1).—Final result. The tubes have been removed. All the cavities have been obliterated and recovery is complete.

Instead of shortening the period of convalescence, aspiration greatly prolongs it. The following statistics are offered by way of comparison: McEnery and Brennemann [3] reported on ninety-four patients treated by aspiration with a period of convalescence of ninety days. Packard [8] reported on fifty patients treated by closed drainage with obliteration of the empyema cavity in forty-six days. Graham and Berck [9] reported on 116 patients treated by open drainage with obliteration of the cavity in thirty-seven days. Mason [2] reported on sixty-two patients who were treated by open drainage with obliteration of the cavity in thirty-two days and twenty-seven patients who were treated by closed drainage with obliteration in thirty-five days.

5. Woringer, Pierre: Les résultats du traitement de la pleurésie purulente par l'optochine, Rev. franç. de pédiat. **5**: 60 (Feb.) 1929.

6. Ochsner, Alton, and Gage, I. M.: The Treatment of Acute Empyema Thoracis, with a Review of One Hundred Consecutive Cases, Proc. Inter-State Post-Grad. M. Assemb., North America **6**: 261, 1931.

7. Strong, R. A., cited by McEnery and Brennemann.[3]

8. Packard, G. B., Jr.: Empyema in Children, Surg., Gynec. & Obst. **53**: 255 (Aug.) 1931.

9. Graham, E. A., and Berck, Maurice: Principles Versus Details in the Treatment of Acute Empyema, Ann. Surg. **98**: 520 (Oct.) 1933.

CERTAINTY OF CURE

In general from 65 to 75 per cent of patients treated by aspiration are reported as cured after prolonged periods. It is necessary for the remaining 25 to 35 per cent to undergo operation after the failure of repeated aspirations. Operation is followed by a further period of convalescence, while the mortality, as already indicated, is no lower and is perhaps higher than that following operative methods.

No one can estimate the mortality in the hands of the less capable internists and pediatricians throughout the country who may persist in resorting to aspiration far beyond the limits of safety.

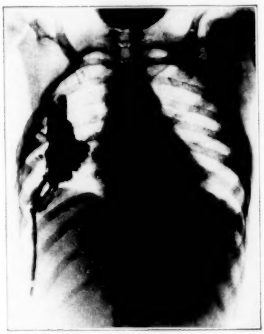

Fig. 4 (case 2).—Condition found at time of third readmission. The empyema cavity is injected with iodized poppy-seed oil.

Drainage of an empyema cavity, whether by resection of a rib, intercostal incision or the trocar-cannula-catheter method, is a minor procedure. With the use of preliminary sedatives the operation can be performed under local anesthesia without pain and, if undertaken at the proper time, is not attended with shock.

When one realizes these facts, there seems to be little justification in subjecting a patient to the prolonged treatment necessary to bring about cure by aspiration.

Concerning the type of effusion which should be classed as a true empyema, Graham [9] wrote as follows:

> It is perhaps advisable to call attention to the fact that nearly every case of acute pneumonia will reveal some fluid in the pleural cavity if an aspiration is performed. This fluid is serofibrinous or serohemorrhagic. Even though leukocytes and bacteria may be found in it on microscopic examination, it does not indicate an empyema in the sense of a true abscess. In most cases this fluid will be absorbed as the pneumonia clears. Statistics, therefore, based on the recovery of such patients after aspiration or continuous closed drainage are often misleading.

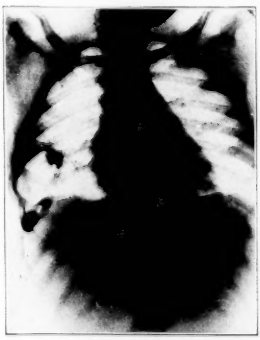

Fig. 5 (case 2).—Three weeks after thoracoplasty and packing of the empyema and subphrenic cavities. Remnants of iodized poppy-seed oil are seen in the abscess cavities. Healing is now complete.

CLOSED OPERATIONS

At the beginning of the empyema epidemic during the World War the practice of early open thoracotomy

was associated with a frightful fatality; hence the spectacular reduction in mortality that followed the closed trocar-cannula-catheter operation introduced by Diedrich [10] at Camp Pike attracted wide attention and found many ardent supporters. While the mortality was much reduced and many permanent cures were effected, chronic empyema often followed, necessitating many secondary operations and resulting in some fatalities.

At the present time early open thoracotomy is banned, and such operations are deferred until sufficient time has elapsed to insure stability of the mediastinum and fixation of the lung, as indicated by the presence of thick pus.

It has been difficult to convince those who have viewed closed drainage in the light of these earlier experiences that this type of operation possesses few if any of the advantages formerly claimed for it over the properly planned and executed method of open drainage as now employed.

It does not fulfil two of the demands already mentioned in that it does not lower the mortality or shorten convalescence; nor is the promise of cure without frequent secondary operations any too well assured.

It is generally recognized that closed operations remain closed for only a few days, since air soon gains access to the pleural cavity by leakage around the tube or in some of the connections. This may take place accidentally soon after operation, thereby converting a closed into an open thoracotomy at an inopportune time.

The Army Empyema Commission did not endorse this method, believing that it was potentially dangerous and possessed no advantage over repeated aspiration followed by open thoracotomy when the proper stage is reached.

McEnery and Brennemann [3] gave a more recent estimate of the comparative advantages of aspiration and closed operations as follows:

> The so-called closed operation is obviously a continuous closed method, whereas aspiration is an interrupted closed method. Results in general have been much the same by both methods. There are, however, two serious handicaps in the closed method. From all reports it does not always remain closed. There is like unanimity of opinion that it requires a meticulous care which is rarely available or feasible, and that it makes it less "fool proof" than open operation or aspiration.

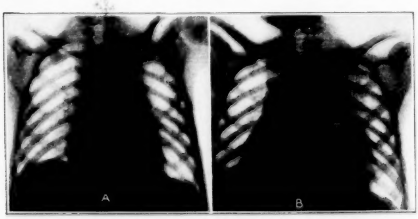

Fig. 6 (case 3).—*A*, May 18, the broad mediastinal shadow is continuous with that of the heart. The lungs are clear. *B*, May 23, the heart and mediastinum are displaced to the right. The shadow has extended farther to the left. The periphery of the lungs remains clear.

In studying reports from different sources it becomes apparent that closed operations are undertaken with two entirely different purposes in view. Some operators, among them Alexander,[11] operate early with the deliberate purpose of following this with secondary resection of a rib when the pus has become sufficiently thick. Others employ the operation after the stage of thick pus has been reached, seeking a cure by this method and resorting to secondary resection of a rib only when the closed operation fails.

So many technical devices have been developed in connection with operations for empyema that it is possible to mention only a few.

Singleton's [12] non-collapsible metal drainage tube and Hart's [13] method of tidal irrigation are notable improvements in the method of closed drainage, the advantages of which will appeal to those who favor that type of operation.

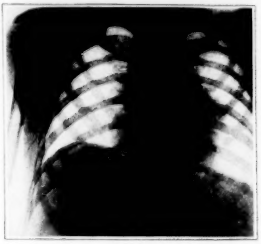

Fig. 7 (case 3).—Complete recovery followed resection of the seventh rib posteriorly near its angle on the left side with drainage by tube of the encysted empyema.

Carlson and Bowers [14] recently described a method that combines the principle of adequate drainage with closed operation, something seldom obtainable. This is accomplished by means of a large tube inserted through a thoracotomy opening made by resection of a rib. The tube is passed through a rubber sponge that is strapped over the wound to make it air tight, after which negative pressure is applied by suction.

OBLITERATION OF EMPYEMA CAVITIES

The belief that obliteration of empyema cavities is materially hastened by closed operations or methods of siphon suction designed to maintain negative pressure is not supported by experience with open thoracotomy, in which complete healing is observed to take place with equal rapidity.

The use of the Woulfe bottle in the postoperative treatment does not occupy as prominent a place as was formerly accorded it. It cannot be employed in the treatment of young children and has been discarded in some of the larger clinics, notably in the children's services of Bellevue, Willard Parker and Knickerbocker hospitals, new York, according to a report by Bohrer.[15]

The present concept of the process of healing was stated by Heuer [16] as follows:

> When the cavity becomes sterile the lung will approach the chest wall, and the important and essential factor is the traction and pull of the granulation tissue upon the visceral pleura at its junction with the parietal pleura; this traction or contraction continuing until the visceral and parietal pleura come in contact with each other and fuse.

10. Diedrich, V. P.: A Review of the Treatment of Purulent Pleuritis at Camp Pike Base Hospital, Surg., Gynec. & Obst. **28:** 362 (April) 1919.

11. Alexander, John: Air-Tight Intercostal Drainage of Acute Empyema, J. A. M. A. **92:** 1818 (June) 1929.

12. Singleton, A. O.: Simplified Treatment of Thoracic Empyema, Tr. South. S. A. **42:** 377, 1929.

13. Hart, Deryl: Empyema: Treatment by Tidal Irrigation and Suction, Arch. Surg. **19:** 1732 (Dec.) 1929.

14. Carlson, H. A., and Bowers, H. A.: Acute Empyema: Mortality, Healing and Methods of Treatment, Internat. S. Digest. **18:** 131 (Sept.) 1934.

15. Bohrer, J. V.: Acute Empyema in Children, Ann. Surg. **100:** 113 (July) 1934.

16. Heuer, G. J.: Acute Empyema, J. Thoracic Surg. **1:** 461 (June) 1932.

My own experience with open thoracotomy in children and adults commits me to an acceptance of this explanation of the obliterating process.

Wangensteen,[17] who has so successfully applied suction siphonage in the treatment of abdominal distention and paralytic ileus, has presented an interesting discussion of this principle in securing expansion of the lung following drainage of an empyema cavity.

Koster and his associates[18] reported eight cases of empyema in children in which rapid reexpansion was obtained by the production of artificial pneumothorax in the uninvolved side. Their explanation was that as a result of the pneumothorax the lung on the involved side undergoes compensatory expansion together with a shift of the mediastinum to the affected side, thus lessening the size of the cavity.

As set forth in my previous reports, I do not favor closed operations, and the following quotation from Graham's[19] "Surgical Diseases of the Chest" exactly expresses my views concerning the treatment of acute empyema, and outlines the practice that I have followed for years:

> Open drainage after the pleural infection has become a true abscess offers the advantages of free and adequate drainage without the necessity of complicated apparatus. Our preference in most cases of acute empyema is to carry on repeated aspirations until such time as the exudate has become frank creamy pus, and then to drain openly, usually by the resection of a portion of a rib at the most dependent part of the empyema cavity.

From investigations conducted in three series of cases my associates and I have ascertained that the stage when thick pus is present, that is, the safely operable stage, is reached approximately eighteen days after the onset of pneumonia.

If empyema developed while the patient was under observation and treatment in a hospital, thick pus was obtained in the three series as follows:

Children's Hospital 1929 report, 18.40 days.
Children's Hospital 1934 report, 17.40 days.
Hillman Hospital 1934 report, 19.33 days.

During the same periods it was found that those patients who suffered from respiratory infections outside the hospital and who were admitted with a diagnosis of empyema had been ill for an average of thirty-five, thirty-three and thirty-two days, respectively.

From these observations it is deduced that the patient with postpneumonic empyema is safely operable at the end of three weeks from the onset of his illness, and that the patient who enters the hospital anemic, weak and toxic as a result of empyema has undergone unnecessary septic absorption for approximately two weeks. This is not to be construed as a plea for early operation but rather as a warning against undue delay.

The ordinary type of empyema which involves the general pleural cavity gives but little trouble with regard to diagnosis or treatment. Apical encysted empyemas or those situated mesially or in the fissures of the lung, which have been so well described by Berry and Childs,[20] are difficult of diagnosis, often missed on aspiration and sometimes located only after diligent search at operation. Stereoscopic x-ray films are invaluable in such cases. While the practice may not be without danger, I have found it necessary in certain instances to make digital exploration and to break up adhesions before reaching these isolated abscesses. Obviously, trocar-cannula operations cannot be employed in such cases.

The investigation of Neuhof and Berck[21] tended to show that staphylococcic empyema or pyopneumothorax is a definite entity, and they expressed the belief that the staphylococcus is the cause of the great majority of suppurative pleural infections in infants. While in our series the pneumococcus was isolated in fifty-one instances and the staphylococcus in but six, their claims are interesting and the subject justifies further study.

The statistical information gained by adding the thirteen recent cases to my 1934 report is of no special interest except concerning the mortality. The revised figures are as follows: seventy-two patients were treated by open operation and resection of a rib with five deaths, a mortality rate of 6.94 per cent; thirty were treated by closed trocar-cannula operations with six secondary resections and three deaths, a mortality rate of 10 per cent. One patient recovered after two aspirations.

A high death rate among young children has always been noted in cases of empyema and, of the eight deaths in this series, seven were of children under 3 years of age. The rates for these early years were as follows: In the first year of life there were six cases with two deaths, a mortality of 33⅓ per cent. In the second year there were eleven cases with two deaths, a mortality of 18.18 per cent. Under 3 years of age there were thirty-one cases with seven deaths, a mortality of 22.5 per cent.

For comments on these results and on the management of cases of empyema in general, I shall draw on my 1934 report.[1]

I am inclined to attribute favorable results in this series to the fact that there were no early open operations, and no early operations of any sort if aspiration is excluded; to the use of local anesthesia in eighty-nine of the 103 cases, and to the performance of open thoracotomy and drainage by tube at the proper time in more than two thirds of the cases.

I can hardly subscribe to the opinion expressed by Graham[9] and held by some others, that "if care is taken to avoid open pneumothorax in the formative period of an empyema, it makes practically no difference, so far as mortality is concerned, whether the case is treated continuously by some form of closed drainage or by the institution of open drainage after a true empyema, that is, a true abscess, is present."

Steinke[22] recently reported a series of 310 cases in children with a general operative mortality of 15.8 per cent. He stated that the lowest death rate of any of the methods employed was in the group treated by resection of a rib, which gave a mortality of 11.9 per cent.

In the present series the closed operation showed a higher mortality, a slightly longer period of convalescence and in certain instances inadequate drainage, necessitating secondary resection of a rib and open drainage in 20 per cent of cases. This record is in keeping with practically all reports on closed drainage.

17. Wangensteen, O. H.: Observations on the Treatment of Empyema, with Special Reference to Drainage and Expansion of the Lung, J. Thoracic Surg. **4**: 399 (April) 1935.
18. Koster, Harry; Rosenblum, Jacob; Kasman, L. P., and Lerner, Henry: Empyema in Children, J. A. M. A. **104**: 1484 (April 27) 1935.
19. Graham, E. A.; Singer, J. J., and Ballon, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935.
20. Berry, F. B., and Childs, E. P.: The Fissures of the Lungs, Ann. Surg. **96**: 961 (Dec.) 1932.
21. Neuhof, Harold, and Berck, Maurice: Staphylococcic Empyema and Pyopneumothorax, Arch. Surg. **30**: 543 (March) 1935.
22. Steinke, C. R.: Acute Empyema in Children, Ann. Surg. **101**: 617 (Jan.) 1935.

The general plan of treatment which I have formulated and some of the details that have been found important are as follows:

1. After a physical examination roentgenograms are made in every suspicious case.

2. Aspiration is performed and is repeated as often as indicated in order to decompress the lung, to ascertain the character of the effusion, to determine the infecting organism and to make certain that the patient is not subjected to operation until the proper stage has been reached. Also following aspiration the patient is observed frequently to see if any curative tendencies can be detected.

3. Resection of a rib with drainage by tube is carried out under local anesthesia unless there is some special reason for the use of a general anesthetic.

4. The tube should be of large caliber, not stiff, not too long and placed at the most dependent part of the cavity. It should be so fixed to the edge of the wound that it will neither slip into nor out of the empyema cavity. I would here warn against the use of old or rotten tubing. I have known such tubing to tear off at its point of attachment to the wound by suture or pin and to escape into the cavity, with great annoyance to the surgeon and discomfort to the patient.

5. Following the operation the wound is covered with a large dressing of sterile gauze and this is changed as often as it becomes soiled. After the first forty-eight hours a change will rarely be necessitated oftener than once a day.

6. Irrigations are not employed in the postoperative treatment unless some special indication is noted.

7. The original tube may remain undisturbed for from seven to ten days; after that it should be changed daily, and its length and diameter diminished to conform to the needs of the lessening size of the abscess cavity. The progress of obliteration can be well observed by the frequent use of the x-rays. Our own practice is to make fluoroscopic examinations once a week, and to obtain stereoscopic films every two weeks when healing is slow. The same information may be obtained by measuring the capacity of the cavity from time to time.

8. Any sudden rise in temperature in a convalescent patient demands prompt investigation of the drainage tract. If no obstruction is found, diligent search should be made to ascertain the source of the trouble. In children this will often be found in the intestinal canal or in the middle ear.

Likewise, if a rise of temperature occurs after the removal of the drainage tube, it usually indicates that the tube has been removed too early and must be replaced unless some other definite cause for the rise can be discovered.

Furthermore, when a pleural abscess has been drained and the temperature does not show a definite tendency to subside, other areas of encysted empyema should be sought for, since recovery will be delayed until each pocket has been drained.

The foregoing plan of treatment was followed in the forty patients in this series who were under my personal charge, with only one death, a mortality of 2.5 per cent. The death was that of a boy aged 3 years who had been ill for three months before admission.

Among the very young patients successfully treated by resection of a rib and open drainage were five whose ages were 24, 22, 20, 5 and 3 months, respectively.

With one exception all the patients were kept in the hospital until the empyema cavity was completely obliterated, and that patient reported for examination at intervals until complete healing had taken place.

Several unusually interesting cases have been observed in this series, and three are deemed worthy of special report:

Case 1.—*Multiple encysted empyema pockets.* On account of multiple encysted pleural abscesses this patient was forced to undergo three operations before recovery finally took place. This case is reported in full in the *Southern Medical Journal.*[1]

Case 2.—*Acute appendicitis; spreading peritonitis; suspected subphrenic abscess; empyema.* Six days after operation for gangrenous appendicitis with spreading peritonitis the patient was found to have acute empyema and was treated by resection of a rib and drainage by tube. The suspected underlying subphrenic abscess was not located. The patient recovered but was readmitted on three subsequent occasions because of reaccumulations of pus in the pleural cavity. These were relieved by inserting a tube in the drainage tract. On a fourth admission she was placed in my care. The pleural abscess was exposed by the resection of three overlying ribs. Exploration through this opening revealed also a small subphrenic abscess. The two cavities were converted into one by the excision of the intervening portion of the diaphragm. This cavity was packed with gauze, according to the method of Connors, and healing was rapid.

Case 3.—*Encysted empyema, left upper and posterior aspect of the thorax.* A white girl, aged 9 years, admitted to the Children's Hospital on May 14, 1935, had been ill for only about twenty-four hours. Examination revealed a high fever, abdominal distention, a high leukocyte count, normal urine and no pulmonary abnormalities. She complained greatly of pain, mostly in the abdomen. It gradually became localized in the left upper portion of the abdomen and in the region of the left kidney. For the first few days there was no cough.

On May 18 a flat x-ray plate showed a broad mediastinal shadow but the lungs remained clear. Subsequently pericardial friction was observed, together with a slight cough and suppression of the breath sounds over the posterior and upper part of the left side of the chest.

On May 23 stereoscopic x-ray films of the chest showed a much broader mediastinal shadow, with the heart and mediastinum displaced to the right, but with the lungs clear except toward the midline on the left side. Study of the stereograms showed that the shadow extended well up to the posterior wall of the chest. By aspiration at the sixth interspace near the angle of the rib, thick pus was withdrawn that showed pneumococcus on smear and culture.

On May 27, under local anesthesia, the seventh rib on the left side was resected near its angle. Drainage by tube was followed by complete recovery.

POSTOPERATIVE CARE

The importance of the postoperative care of an empyema patient cannot be too strongly emphasized. He should be encouraged to get out of bed and into fresh air as early as possible. The diet should be generous. Transfusions, tonics and similar restorative measures should be employed as indicated.

When a tube has been placed in an empyema cavity through an intercostal incision, by resection of a rib or by means of a trocar and cannula or some other closed method of operating, it is incumbent on the attendant to maintain continuous unobstructed drainage until the cavity is entirely closed. No patient should leave the direct supervision of the surgeon until the tube has been out of the pleural cavity for several days without recurrence of symptoms, and until roentgen and physical examinations demonstrate that the cavity is completely obliterated.

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RAYMOND HERTWIG, Secretary.

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City Dairy, Sturgis, Mich.
Deneen's Dairy, Sharpsville, Pa.
Dinsmore Dairy Company, Jacksonville, Fla.
Durham Dairy Products, Inc., Durham, N. C.
Early Dawn Dairy, Waynesboro, Va.
Elmore's Creamery, Elwood, Ind.
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Herold's Dairy, Butler, Pa.
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Ideal Dairy, Wooster, Ohio.
Iowana Farms, Davenport, Iowa.
Joppe's Dairy, Grand Rapids, Mich.
Kern Dairy, Constantine, Mich.
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Licensor.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with vanilla, vanillin and coumarin. See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p. 2187).

MELVERN BUTTERED ALMOND ICE CREAM

Manufacturer.—Melvern Dairies, Inc., Washington, D. C.

Description.—Basic ice cream mix (THE JOURNAL, July 13, 1935, p. 121) flavored with "buttered almonds" prepared from blanched almonds, brown sugar, corn syrup, salt and butter.

Manufacture.—The process of preparation and freezing is the same as described for Melvern Vanilla Ice Cream (THE JOURNAL, July 13, 1935, p. 121).

Analysis (submitted by manufacturer).—

Fat	14.5%

MACY'S STRAINED CEREAL

WITH ADDED WHOLE MILK, SOY BEAN FLOUR, TRICALCIUM PHOSPHATE, YEAST AND SALT

Distributor.—R. H. Macy & Company, Inc.

Manufacturer.—Stokely Brothers & Company, Inc., Indianapolis.

Description.—Cooked sieved blend of farina, rolled oats, wheat germ, barley flour, whole milk, soy bean flour, yellow cornmeal, salt, tricalcium phosphate and brewers' yeast (same as THE JOURNAL, Feb. 16, 1935, p. 563).

JEFFERSON ISLAND EVAPORATED FREE RUNNING TABLE SALT

Distributor.—Jefferson Island Salt Company, Inc., Louisville, Ky.

Manufacturer.—Jefferson Island Salt Mining Company, Inc., Jefferson Island, La.

Description.—Table salt containing 1 per cent added magnesium carbonate.

Manufacture.—Mined rock salt is purified by converting into brine which is allowed to settle. The clear, supernatant brine is evaporated under vacuum to crystallize out the salt. The salt crystals are dried, screened, mixed with definite amounts of magnesium carbonate and packed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	less than 0.1
Calcium sulphate	0.1
Calcium carbonate	0.03
Magnesium carbonate	0.9
Sodium chloride (by difference)	98.9
Silica	0.006

Claims of Manufacturer.—For all table and cooking uses. The added magnesium carbonate tends to preserve "free running" qualities.

McCORMICK'S BEE BRAND KETCHUP SPICE

Manufacturer.—McCormick & Company, Inc., Baltimore.

Description.—Ground mixture of allspice, paprika, saigon cinnamon, cloves, mustard flour, celery seed, dehydrated onion, cayenne pepper and nutmeg.

Manufacture.—Ingredients, prepared as described for McCormick's Bee Brand Allspice (THE JOURNAL, Oct. 28, 1933, p. 1393), are mixed in formula proportions and automatically packed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	8.0
Total ash	5.5
Ash insoluble in hydrochloric acid	0.3
Volatile ether extract	4.4
Nonvolatile ether extract	9.2
Protein (N × 6.25)	11.5
Sucrose	0.4
Starch	1.2
Crude fiber	18.5
Carbohydrates other than crude fiber (by difference)	42.9

MARGO

VEGETABLE LECITHIN AND ASSOCIATED PHOSPHATIDES WITH VEGETABLE OIL

Distributor.—American Lecithin Corporation, Atlanta, Ga., and New York.

Manufacturer.—Hansa Muehle, Hamburg, Germany.

Description.—Soy bean lecithin and associated phosphatides with about 30 per cent of soy bean oil.

Manufacture.—Soy beans are cleaned of foreign material, washed, dried, crushed, rolled and extracted with a mixture of petroleum ether and benzene. The extracted soy bean meal retains about 1 per cent of oil. The solvents are removed from the oil and lecithin extract by steam distillation. The oil and lecithin residue is bleached with hydrogen dioxide under reduced pressure. Some of the oil is separated from the oil-lecithin residue by addition of water. The resulting product, containing about 30 per cent of soy oil and 70 per cent crude lecithin is mildly heated in a vacuum to remove water and volatile matter. Low temperatures are used during the manufacturing process to prevent decomposition of the lecithin.

Analysis (submitted by manufacturer).—

	per cent
Moisture	0.7
Ash	4.0
Petroleum ether extract	63.6
Acetone extract	35.7
Total nitrogen (N)	1.0
Total phosphorus (P)	2.3

Calories.—8.6 per gram; 244 per ounce.

Claims of Manufacturer.—An emulsifying agent for use in foods. Contains readily assimilable phosphorus in organic form.

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SATURDAY, OCTOBER 5, 1935

CHRONIC CONSTRICTIVE PERICARDITIS—PICK'S DISEASE

The development of our knowledge of chronic constrictive pericarditis, sometimes known as Pick's disease, has recently been traced comprehensively by White [1] in a lecture at the Royal Society of Medicine in London. The diagnosis of this condition has added significance now because of the possibility of cure by surgery; in the past the prognosis was hopeless, with a prospect of years of invalidism in most cases. Since there have been promising numbers of operative cures in Germany and in the United States, it is important that the disease be recognized by the medical profession. The majority of the patients are chronically ill at home or in institutions caring for chronic invalids; rarely do they enter hospitals for acute diseases. The cases are probably for the most part diagnosed as heart disease or cirrhosis of the liver.

Constrictive pericarditis has actually been recognized for centuries, but only by occasional observers. Even Galen,[2] the great Greek physician who practiced in Rome about 160 A. D., realized that pericardial disease, in particular effusion, might interfere with proper heart function; but it was the Englishman Lower [3] who first clearly recognized the effect of cardiac constriction by pericarditis. Thus in 1669, a century before Morgagni, who is sometimes credited with the first accounts of pericarditis, he wrote that "a profuse effusion oppresses and inundates the heart. . . . The walls of the heart are compressed by the fluid settling everywhere so that they cannot dilate sufficiently to receive blood; then the pulse becomes exceedingly small, until finally it becomes utterly suppressed by the great inundation of fluid, whence succeed syncope and death itself." Lower also recognized that interference to proper heart action arises when there are thick constricting adhesions and he reported the case of a London housewife, aged 30, whose pericardium at necropsy "was not, as is proper, thin and transparent, but thick, opaque, and even callous." Lancisi [4] in 1728 described the small pulse, engorgement of the jugular veins, and enlargement of the abdomen in a young man in whom necropsy revealed a small heart with thick completely adherent pericardium. In 1760 Morgagni [5] described a somewhat similar case but tended to throw future observers off the scent by describing a number of cases of adhesive pericarditis without any disability whatever.

In 1842 an Englishman named Chevers [6] clearly recognized and described chronic constrictive pericarditis; but even though he wrote in *Guy's Hospital Reports* in the great days of Bright and Addison his observations escaped notice and were resurrected for a brief moment in 1870-1871, when another Guy's Hospital man, Samuel Wilks,[7] called attention to them, apparently in vain. A brief quotation from Chevers will show how clearly he recognized the pathogenesis of the disease: "The principal cause of dangerous symptoms in cases of the above description appears to arise from the occurrence of gradual contraction in the layer of adhesive matter which has been deposited around the heart, compressing its muscular tissue, and embarrassing its systolic and diastolic movements, but more particularly the latter."

After the time of Wilks (1870) the German workers became the leaders in the recognition and treatment of chronic constrictive pericarditis, beginning with Kussmaul [8] in 1873 and going on through Pick [9] in 1896 to the pioneer surgeons Rehn,[10] Sauerbruch [11] and Schmieden,[12] and to Volhard,[12] who in 1923 wrote his classic paper on the diagnosis of the disease. Pick's name has unfortunately been attached to the disease; to be sure he did revive interest in it and emphasized one of the important characteristics, liver enlargement with ascites, but he was after all only one of a line of keen observers.

One French name stands out as a beacon along the way, that of Delorme,[13] who for years urged pericardial resection to free the heart. Brauer [14] advocated rib resection to remove external pericardial adhesions, but

1. White, P. D.: Chronic Constrictive Pericarditis (Pick's Disease), Treated by Pericardial Resection: The St. Cyres Lecture of the National Hospital for Diseases of the Heart, Lancet **2:** 539 (Sept. 7), 597 (Sept. 14) 1935.
2. Galen, Claudius: De affectionibus localis, book 5.
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12. Volhard, Franz, and Schmieden, Victor: Ueber Erkennung und Behandlung der Umklammerung des Herzens durch schwielige Perikarditis, Klin. Wchnschr. **2:** 5 (Jan. 1) 1923.
13. Delorme: Sur un traitement chirurgical de la symphyse cardo-péricardique, Bull. et mém. Soc. de chir. de Paris **24:** 918, 1898.
14. Brauer, L.: Ueber chronische adhäsive Mediastino-Pericarditis und deren Behandlung, München. med. Wchnschr. **49:** 1072, 1902.

that operation is of no avail in cases of chronic constrictive pericarditis except as an approach to the operation of Delorme.

White [1] presents the following definition and diagnostic criteria:

> Chronic constrictive pericarditis consists of a chronic fibrous or callous thickening of the wall of the pericardial sac which is so contracted that the normal diastolic filling of the heart is prevented. A condition called "inflow stasis" results. There may or may not be calcification of the pericardium, obliteration of the pericardial cavity, or important external pericardial adhesions. There may or may not be an associated accumulation of pericardial fluid in small amount, as in pockets. The parietal pericardium may be preponderantly affected or the epicardium may be also seriously involved or both pericardial membranes may be securely or even inseparably united. One section of the pericardium, as over the cardiac apex, may remain relatively free and but slightly thickened, while another part, as over the right auricle and great veins, is markedly contracted; or the entire heart and roots of the great vessels may be encased uniformly in a tightly fitting envelop. There may or may not be an acute or chronic polyserositis, which is, contrary to a common belief held even in the best medical circles, a different thing. There may or may not be frosted liver (perihepatitis) or spleen (perisplenitis). There may or may not be heart disease itself—the association of chronic constrictive pericarditis, of any important degree at least, with heart disease is very rare. . . . The signs of chronic constrictive pericarditis are similar in most respects to those of acute constrictive pericarditis, or cardiac tamponade, due to pericardial effusion, and indeed the signs of the former condition may follow the signs of the latter without any interruption at all or more often after an interval of months or years. The insidious evolution of the disability due to chronic constrictive pericarditis, frequently with no history of a preceding acute pericarditis, makes the diagnosis far more difficult than that of acute constrictive pericarditis that usually develops with striking signs and symptoms in the course of a few hours or days.

On a basis of fifteen certain cases of chronic constrictive pericarditis personally observed and studied at the Massachusetts General Hospital, six of which were cured by pericardial resection by E. D. Churchill and one other greatly relieved (out of ten patients operated on), White concluded that the leading diagnostic clues are "(1) the insidious onset of chronic dropsy in a young person, (2) preponderant liver enlargement and ascites, (3) increased prominence of the jugular veins, (4) normal or relatively normal heart in the presence of dropsy without nephritis, (5) low blood and pulse pressure and paradoxical pulse, (6) x-ray evidence (poor pulsation, calcification, or chronic pleuritis), (7) electrocardiography (low voltage or 'coronary' T waves in chronic disease in early youth), and (8) a previous history of acute pericarditis or polyserositis." At least several of these clues are to be found in every case, especially the first four and the seventh; the fifth, sixth and eighth are more inconstant.

The cause of the disease is in many cases obscure. It may begin with an acute pericarditis or polyserositis of unknown etiology, it may be tuberculous, it may follow a severe pneumonia, or it may be of septic origin. Almost never is it rheumatic; in fact, the finding of valvular disease is strong though not conclusive evidence against the diagnosis of chronic constrictive pericarditis.

Although uncommon, the disease is not so rare as formerly supposed, as is indicated by the discovery during the last few years of these fifteen cases in Boston, of fourteen cases in Cleveland,[15] and of cases in Nashville, Tenn.[16]

A NEW HEALTH SURVEY

Coincidental with the appearance of this editorial begins a survey, under the auspices of the United States Public Health Service cooperating with state and city health departments, of chronic illnesses and physical impairments in the general population. In presenting the survey it is pointed out that most of the gain in longevity has come from the control of the infectious diseases of childhood. It is now proposed to study the causes of chronic illnesses and disabilities that usually appear after middle life.

It is understood that the stimulus for this survey came from the Secretary of Labor and that it meets with administration approval. It is expected to throw light on the problem of medical care for the people; moreover, it will give employment to 30,000 workers to be selected from those on relief rolls. The survey is to be carried on in nineteen states divided into five areas, which will include large cities, smaller cities, towns and rural communities. Elsewhere in this issue appears a list of the states and cities which have been selected for these studies. Personal interviews will be held with 750,000 families. The survey will begin October 15 and presumably the field work will end in March 1936. Thereafter will come the question of tabulation, analysis and preparation of the final report.

The survey is in charge of L. R. Thompson, Assistant Surgeon General, United States Public Health Service. In each area a regional supervisor has been appointed. Under these supervisors will be state and city supervisors and field workers. In each state concerned, the approval of the state health officer had been secured before the state was included in the survey. Local health officers have also been approached in the cities. Later in the survey attempts will be made to verify the diagnoses of illnesses reported in the house-to-house canvass. For this purpose those in charge of the survey will seek the cooperation of local medical societies.

The blank to be used by the enumerators in their house-to-house canvass (pages 1127 and 1128) will call for information concerning the names and ages of those in the household, their employment status, including the occupation and the industry concerned, whether or not they hold membership in any sick-benefit organization and whether or not they have been immunized against smallpox and diphtheria. A record will be made also of all disabling illnesses, including those lasting seven days or longer, and whether or not the patient was in

15. Beck, C. S., and Cushing, E. H.: Circulatory Stasis of Intrapericardial Origin, J. A. M. A. **102**: 1543 (May 12) 1934.
16. Burwell, C. S., and Flickinger, D. D.: Obstructing Pericarditis, Arch. Int. Med. **56**: 250 (Aug.) 1935.

the hospital, with a record of the termination of the illness. The name of the physician and the hospital will be recorded; also the record of nursing attention and whether the patient has had previous attacks of the same disease. Records will be made of handicapping diseases and such conditions as asthma, neuralgia, cancer, diabetes and similar chronic disorders; also any record of tuberculosis, loss of legs, arms or fingers, crippling deformities, hernia, deafness and blindness. Notation will be kept as to whether or not any member of the family has been in attendance at a health clinic or health center, and finally statements will be made as to housing conditions and the income of the family. Eventually, as has been stated, it is proposed to check this information by calls on physicians who were reported as having been in attendance on the patients.

When this information is assembled it will be reported scientifically in the usual manner by the United States Public Health Service. Presumably these records will be made the subject of considerable editorial comment and debate on the question of the costs of medical care and the methods of its provision. Apparently there are not available anywhere in the world any useful statistics on the subject of chronic and disabling illnesses. Whether or not the survey here contemplated will yield material capable of scientific study remains to be determined. The project is obviously an exceedingly costly one, and the administration will be open to severe criticism if the study fails to yield data of scientific value.

THE CONNELL CANCER CURE

In Kingston, Ont., Dr. Hendry C. Connell, an assistant professor at Queen's University Faculty of Medicine, has announced a new treatment for cancer. It has been heralded by the press as a "cancer cure." Doctors will search in vain the archives of scientific medicine for any report by Dr. Connell of his contribution to medical advancement. He apparently made his announcement first in the newspapers. Those interested must turn to the *Detroit Saturday Night*, the *Utica Observer Dispatch* and the *Whig Review* of his own town to discover the nature of Dr. Connell's performance. According to the *Detroit Saturday Night*, 125 cancer patients have been in the Kingston General Hospital improving under the Connell treatment, and victims of cancer are moving into the city in increasing numbers. Kingston has turned over part of its municipal hall for the enlargement of his research work, and the Department of Health of the Ontario government is collecting cancer tissue from all parts of Canada so that Dr. Connell can use it in making up his preparation. He calls it "Ensol."

The background of this performance is said to be some experiments made by Dr. Connell four years ago in an attempt to control cataract. He grew nonpathogenic proteolytic micro-organisms on protein mediums. These organisms were themselves liquefied in the process, so that an enzyme was produced. It was found that this enzyme would liquefy proteins similar to its base. In other words, Dr. Connell claims to have developed a substance which would break down cataractous lens tissue without reacting on other proteins. By a similar process, he says, he developed an enzyme which would break down cancer tissue.

On July 13 Dr. Hendry C. Connell sent a letter to the editor of THE JOURNAL in which he enclosed a copy of a statement which he had given to the Canadian press. In that statement he announced that full and detailed reports of his work would be prepared for publication in medical journals as quickly as possible. His letter was acknowledged in the usual manner. This brought from him a letter stating that he had promised to submit a complete statement of his work to the *Canadian Medical Association Journal* and requesting the American Medical Association to send a representative to witness his results. He also submitted a statement alleged to be an account of the method of preparation of his product and an account of his results, which include merely some regression of cancer tissue. He concluded his letter with two remarkable paragraphs:

> I am enclosing for your information only and not to be published the last statement I have prepared covering my views on cancer and the facts relating to this work. I have not decided how this will be used or when it will be released for publication. It is my "confession of faith" for the moment and states clearly that I think I have the solution of the problem.
>
> I do this in all humility, with a great sense of responsibility and a profound wonder why I "one of the least of these, my brethren" should be granted the high honor and privilege of bringing this great gift to my fellow men.

This account of the methods pursued by Dr. Connell in promotion of his product reveals procedures more like those of the charlatan than of the scientific investigator. Moreover, his statement of the method of preparation of his product is so incomplete and confused as to make duplication of his work impossible.

The results he claims are similar to those which have been obtained with a half-dozen other methods. In a few cases there are apparently temporary remissions due to damage of the blood vessels in the tumor. The same effects have been produced by Coley's fluid, by various bacterial toxins, by injection of Witte's peptone and by a number of similar foreign proteins. Results probably as good occur with the methods used by many cancer quacks. There does not appear to be any real evidence that an antitumor enzyme is present in the mixture. Notwithstanding these considerations, newspapers have heralded widely Dr. Connell's claims. Great numbers of sufferers from cancer have been stimulated to false hopes. Public officials, university officials, and some Canadian physicians have been led into participation in the promotion of a project which will inevitably bring them grief. The true test of a cancer cure is recovery of the patient and disappearance

of the tumor. How many of Dr. Connell's patients with cancer will be alive in five years? Time is the true tester of cancer cures—yet newspapers continue to lead cancer sufferers to promoters of cancer cures that have been tested only a few weeks or months. If Dr. Connell really realized his responsibility he would have waited to inform the newspapers until he knew whether or not his "discovery" actually had merit. Faith may move mountains but it is yet to be shown that it will cure cancer, even when given in the form of something called "Ensol."

Current Comment

CHILDREN OF THE DEPRESSION POOR

That significant differences exist between the average body weights of children from different economic classes is well known.[1] The weight of children from financially comfortable families exceeds that of children of the poor. The present depression has afforded an opportunity for studying in a large number of cases the effect of a transition from the former group to the latter, since many families that were financially comfortable prior to the depression have become poor since then. A statistical analysis [2] of some 5,000 such families living in certain cities in the eastern half of the United States has yielded interesting information. Weight and height data were obtained on children of typical working-class families, either by direct interview or by transcription from school records. The families chosen fell into three groups: "control families" that had remained financially comfortable during the period from 1929 to 1933, control families that had remained consistently poor, and families that had been comfortable in 1929 but became progressively poorer, reaching the economic level of the continuously poor families by 1933. The average weight of the children from the financially comfortable group was from 5 to 6 per cent higher than that of the children of the consistently poor families. The average weight of children of the "depression poor," however, showed a progressive decrease from a value about the same as that of the children of the financially comfortable families to one nearly as low as that of the continuously poor. Similar statistical studies [3] have shown that the incidence of illness is highest in families of the depression poor. These data furnish quantitative evidence that, as far as the wage-earning class in the large urban centers is concerned, the children from families whose income has fallen to a low level have been most affected by the depression. The foregoing studies emphasize in a convincing manner the deleterious effect of poverty on the state of nutrition and health.

1. Paton, D. N., and Findlay, L.: Poverty, Nutrition and Growth, Medical Research Council, Special Report Series, No. 101, London, His Majesty's Stationery Office.
2. Palmer, C. E.: Height and Weight of Children of the Depression Poor, Pub. Health Rep. **50**: 1106 (Aug.) 1935.
3. Perrott, G. S., and Collins, S. D.: Relation of Sickness to Income and Income Change in Ten Surveyed Communities, Pub. Health Rep. **50**: 595 (May 3) 1935.

Association News

NEW ACTION BY COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

A business meeting of the Council on Medical Education and Hospitals was held at the Brown Palace Hotel, Denver, September 15.

According to the minutes the survey of American medical schools so far completed has revealed certain significant weaknesses; namely,

There is a tendency for medical schools to enlarge their enrolment without a corresponding increase in personnel or instructional facilities.

With a growing appreciation of the necessity for an intimate correlation between clinical and laboratory knowledge, it is evident that this can be obtained only by increasingly close contact between preclinical and clinical departments continuously maintained from the time the student first enters the medical school until he graduates.

The advances of the medical sciences have been and should be independent of any sectarian point of view, and medical education should not be handicapped or directed by a dogmatic attitude toward disease.

For these reasons the Council took the following action:

(*a*) *Resolved*, That in each medical school the number of students should not exceed the number that can be adequately taught with the laboratory, library and clinical facilities available and for whom a sufficiently large and competent teaching staff is provided.

(*b*) *Resolved*, That after July 1, 1938, the Council on Medical Education and Hospitals will no longer publish a list of approved two-year medical schools.

(*c*) *Resolved*, That after July 1, 1938, the Council on Medical Education and Hospitals will no longer carry on its approved list schools of sectarian medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DELAWARE

State Medical Meeting in Wilmington, October 7-9.—The Medical Society of Delaware will hold its annual meeting in Wilmington, October 7-9, with headquarters at the Delaware Academy of Medicine. Dr. Jerome D. Niles, Townsend, will deliver the presidential address on "Medical Ethics, Then and Now." The invocation will be given by the Rt. Rev. Philip Cook, bishop of Delaware, and the address of welcome by Gov. C. Douglass Buck. The following physicians will participate:

Brice S. Vallett, Wilmington, Urology and the Child.
Joseph C. Birdsall, Philadelphia, Infections of the Upper Urinary Tract.
Charles P. White, Wilmington, Acute Otitis Media.
Francis C. Grant, Philadelphia, Diagnosis and Treatment of Brain Tumors.
Henry L. Bockus, Philadelphia, Chronic Ulcerative Colitis—Impressions Gained from a Review of 100 Cases.
Gabriel Tucker, Philadelphia, Cancer of the Larynx: Its Diagnosis and Surgical Cure.
Norris W. Vaux, Philadelphia, Fetal Mortality in Relation to Methods of Delivery.
Damon B. Pfeiffer, Philadelphia, Postoperative Complications with Special Reference to Water and Chemical Balance.
Bartholomew M. Allen, Wilmington, Uncommon Bone Lesions.
Hubley R. Owen, Philadelphia, Closed versus Open Reduction of Fractures.
Charles C. Wolferth, Philadelphia, Diagnosis of Coronary Arteriosclerosis and Its Complications.
John A. Kolmer, Philadelphia, Immunity and Vaccines in Acute Poliomyelitis.

The woman's auxiliary to the society will hold its meeting at the Hotel du Pont, October 9. Guest speakers will be Mrs. Prentiss Willson, Washington, D. C., president of the woman's auxiliary to the Medical Society of the District of Columbia, and Dr. Paul R. Smith, Wilmington, chairman, auxiliary advisory committee, Medical Society of Delaware.

ILLINOIS

Society News.—Dr. Herbert N. Rafferty, Robinson, read a paper on "Management of Head Injuries" before the Crawford County Medical Association, September 12.——At a meeting of the DuPage County Medical Society, September 18, in Elmhurst, Dr. Edward D. Allen, Chicago, spoke on endometriosis.—— The Madison County Medical Society held its meeting at the Alton State Hospital, September 6; Dr. Abraham A. Low, Chicago, gave a clinical demonstration of neuropsychiatric patients. Dr. Joseph Edgar Stewart, St. Louis, addressed the society recently on "Intracapsular Fractures of the Femur."——A skin and cancer clinic was conducted before a joint meeting of the Macoupin and Montgomery county medical societies, September 24, by Drs. Louis H. Jorstad and Clinton W. Lane, St. Louis.——Dr. Lawrence M. Hilt, Springfield, among others, addressed the Sangamon County Medical Society, September 5, on roentgen therapy.

Chicago

Dr. Beck Honored.—Dr. Joseph C. Beck, associate professor of laryngology, rhinology and otology, emeritus, University of Illinois College of Medicine, was guest of honor at a dinner marking his sixty-fifth birthday and the completion of thirty-five years in the practice of medicine, September 26, at the Lake Shore Athletic Club. About 200 persons attended the dinner, which was given by friends and former students of Dr. Beck. Dr. Frank J. Novak Jr. presided; the speakers included Drs. Harry W. Woodruff, Joliet; Ralph A. Fenton, Portland, Ore.; William P. Wherry, Omaha; Burt R. Shurly, Detroit; Samuel J. Kopetzky, New York; Samuel Iglauer, Cincinnati; Otto Joachim, New Orleans, and Louis Ostrom, Rock Island. Dr. Beck graduated from the University of Illinois College of Medicine in 1895. He is a past president of the American Academy of Ophthalmology and Otolaryngology and was chairman of the Section on Laryngology, Otology and Rhinology of the American Medical Association in 1919-1920.

KANSAS

"Eye Specialists" in Kansas.—Two strangers called on a man in Kansas who had failing eyesight. One man claimed to be an "eye specialist." He put some drops of a "special liquid" in the eye and later withdrew it. The "patient," feeling that his sight had been improved, paid the $50 fee requested. The two men then departed in an automobile. Months later two men resembling the "doctor" and his companion called again. "Dr. Hamilton" explained that his friend the "eye specialist" before his death in an automobile accident asked him to call to see if a lasting cure had been effected. "Dr. Hamilton" examined the eye and, after deciding that a complete cure had not been made, treated it in the manner described. He requested and received $50 for his services but promised to refund the first $50 the victim had paid. Two weeks later the companion of "Dr. Hamilton," who called himself "Dr. R. B. Martin" of Independence, returned and said he would give the victim the $50 as promised by "Dr. Hamilton." He presented a cashier's check in the amount of $125 purporting to be issued by the Exchange State Bank of Sapulpa, Okla., payable to "Dr. R. B. Martin" and signed L. J. Askew, cashier. As the check appeared genuine, the victim accepted it and gave "Dr. Martin" $75 in cash. Later he was informed that there is no Exchange State Bank in Sapulpa.

MAINE

Society News.—At a meeting of the Hancock County Medical Society in Bar Harbor, August 22, speakers were Drs. George R. Minot, Boston, on "The Anemias, Their Diagnosis and Treatment," and Robert M. Lewis, New Haven, "Sex Hormones."——Prof. Webster Chester of Colby College, Waterville, addressed the Kennebec County Medical Association, September 4, on "The Doctor and Natural Selection." Dr. John L. Johnson, Bangor, president, Maine Medical Association, also spoke.

Annual Clinical Meeting.—The annual clinical session of the Maine Medical Association will be held, October 24-25, at St. Mary's General and Central Maine General Hospitals, Lewiston. Members of both hospital staffs will present the program; guest speakers will be Dr. Elliott C. Cutler, Moseley professor of surgery, Harvard Medical School, Boston, and Clarence C. Little, D.Sc., director of cancer research, Roscoe B. Jackson Memorial Laboratory, Bar Harbor. Their subjects are respectively "The Surgeon and His Art" and "Problems Pertaining to Cancer." Clinics, demonstrations and a round table conference will form the remainder of the program.

MASSACHUSETTS

Cancer Clinic Reorganized.—The Worcester Cancer Clinic of the Massachusetts State Department of Health has been reorganized and its work concentrated at Memorial Hospital, Worcester, according to the *New England Journal of Medicine*. Its staff has been augmented with the appointment of representative specialists from all Worcester hospitals. At least three specialists will be in attendance at each session of the clinic so that patients may have the benefit of group diagnosis. The clinic is purely diagnostic and each patient will be sent back to the referring physician or hospital with a full report as to diagnosis and treatment advised. There are no charges for this service. The clinic does not interfere in any way with the treatment clinics maintained by the hospitals, it is said, but supplements them by group diagnosis and social service. It will be held every Wednesday morning.

MISSOURI

Annual Clinical Conference.—The Kansas City Southwest Clinical Society will hold its thirteenth annual fall clinical conference at the President Hotel, October 7-10. Speakers will include the following physicians:

Arthur C. Christie, Washington, D. C., Diagnosis and Treatment of Carcinoma of the Breast.
Harlow Brooks, New York, Hepatitis and Hepatic Degeneration.
Albert Soiland, Los Angeles, American and European Cancer Control Problem.
Cyrus C. Sturgis, Ann Arbor, Mich., Treatment of Secondary Anemias with Special Reference to the Use of Iron.
Alfred I. Folsom, Dallas, Texas, Fundamentals in the Treatment of Gonorrhea and Its Complications.
John Alexander, Ann Arbor, Management of Thoracic Tumors Including Carcinoma of the Lung.
William S. Middleton, Madison, Wis., Coronary Disease.
William Wayne Babcock, Philadelphia, Malignant Diseases of the Intestinal Tract.
Edward A. Schumann, Philadelphia, Difficult Labor.
Mynie G. Peterman, Milwaukee, Nutritional Problems in Children.
Fred H. Albee, New York, Rehabilitation.
Harry S. Gradle, Chicago, Prevention of Blindness.
Francis E. LeJeune, New Orleans, The Human Larynx.

A round table luncheon, Monday, the opening day, will be addressed by Dr. Soiland on "The Sea-Going Medico" and Dr. Sturgis, "An Institute for the Study of Blood Diseases." "John Fairbairn Binnie—Surgeon and Man" will be discussed by Dr. Babcock at a round table, Tuesday. Dr. LeJeune will discuss "The Cajun Doctor" at a round table Thursday and Dr. Schumann, "Maternal Welfare." At a public meeting Monday evening Dr. Soiland will speak on "The Relation of Cancer to Public Welfare"; Dr. Brooks, "Exercise and Play for Cardiac Patients," and Dr. Christie, "Medical Care for All of the People at Prices That They Can Afford." The annual banquet will be held Thursday evening. The Kansas City Society of Ophthalmology and Otolaryngology will also hold sessions during the conference; the speakers at its dinner, Thursday evening, will be Dr. Gradle on "Some Aspects of the Glaucoma Problem" and Dr. LeJeune, who will show a color motion picture study of pathologic changes of the larynx.

NEW HAMPSHIRE

Surgical Meeting at Manchester.—The annual meeting of the New England Surgical Society was held in Manchester, September 27-28. Operative and dry clinics were held at Elliott Hospital and the annual dinner at the Manchester Country Club. Among speakers on the scientific program were:

Dr. Edward L. Young Jr., Boston, Secondary Carcinoma of the Large Bowel.
Dr. Horace K. Sowles, Boston, Inflammatory Sclerosis of the Bile Ducts.
Dr. Paul P. Swett, Hartford, Conn., A Form of Sclerosing Osteomyelitis Following Fractures of the Long Bones.
Dr. Frederic J. Cotton, Boston, Statics of the Foot in Relation to Surgery.
Dr. William E. Ladd, Boston, Congenital Absence of the Pericardium.
Dr. Howard M. Clute, Boston, Acute Arterial Obstruction with Arteritis.

NEW JERSEY

Personal.—Dr. Theodore Schlossbach, Asbury Park, has been appointed surgeon to the Wilkins-Ellsworth antarctic expedition. He was to sail September 24 for Montevideo, Uruguay, to join Sir Hubert Wilkins and Lincoln Ellsworth. ——Dr. Warren G. Parish, Philadelphia, has been appointed physician to the Lawrenceville School.

NEW YORK

Health at Utica.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 21, show that the highest mortality rate (21.7) appears for Utica and the rate for the group of cities as a whole, 10.3. The mortality rate for Utica for the corresponding week last year was

17.2 and for the group of cities, 9.6. The annual rate for eighty-six cities for the thirty-eight weeks of 1935 was 11.5 and the same rate appears for the corresponding period for the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

District Meetings. — The Third District Branch of the Medical Society of the State of New York held a meeting in Troy, September 24, with Drs. Louis C. Kress, Buffalo, and Warren Wooden, Rochester, among others, speaking on "Uterine Cancer" and "Gastric and Duodenal Ulcer," respectively. —— Speakers before the Fourth District Branch at a meeting in Saratoga Springs, September 27-28, included Drs. Russell L. Cecil, New York, on "Modern Treatment of Lobar Pneumonia"; Ambrose L. Lockwood, Toronto, "Empyema"; Walter S. McClellan, Saratoga Springs, "Internal Use of Mineral Water," and Howard Lilienthal, New York, "Recent Developments in Thoracic Surgery." Dr. Frederic E. Sondern, New York, president of the Medical Society of the State of New York, made an address at a dinner at the Gideon Putnam Hotel.——A symposium on silicosis was presented as part of the program of the Fifth District Branch at a meeting at Watertown, October 1; speakers were Drs. Charles C. Trembley and Daniel M. Brumfiel, Saranac Lake, and Mr. O. G. Browne, New York, an attorney.——The Sixth District Branch met at Elmira, September 18, with the following speakers, among others, on the program: Drs. Herbert M. Bergamini, New York, "Management of Delayed Union and Nonunion and Malunion of Fractures of the Long Bones"; Joseph F. McCarthy, New York, "The Prostate and Adnexa Considered from a Standpoint of Obstruction, as a Potential Focus of Infection and of Other Constitutional Manifestations," and George W. Crile, Cleveland, "Abatement or Cure of Malignant Hypertension by Dekinetization."——Drs. John A. Kolmer, Philadelphia, and Howard M. Clute, Boston, among others, addressed the meeting of the Seventh District Branch at Canandaigua, September 26, on "Susceptibility, Immunity and Vaccination in Infantile Paralysis" and "Clinical Management of Obstructive Jaundice," respectively.——At the annual meeting of the Eighth District Branch in Warsaw, October 3, speakers were Drs. Géza de Takáts, Chicago, on "Peripheral Vascular Disease"; Howard K. Thompson, Boston, "Management of Arthritis," and Harold Jackson Davis, Albany, "Medical Experiences in the TERA." Dr. Frederic E. Sondern, New York, president of the state society, gave an address.

New York City

First Harvey Lecture.—The first Harvey Lecture of the winter series will be delivered by Max Bergmann, Ph.D., associate member of the Rockefeller Institute for Medical Research, October 17, on "The Proteins and Their Enzymic Degradations." The meeting will be at the New York Academy of Medicine.

Personal. — Dr. Frederic Brush, medical director of the Burke Foundation, White Plains, received the honorary degree of master of physical education at the annual commencement of Springfield College, Springfield, Mass.——Dr. Thomas A. Gonzales, deputy chief medical examiner for Manhattan, the Bronx and Richmond, has been appointed acting chief medical examiner to succeed the late Dr. Charles Norris.——Dr. Paul W. Aschner, Brooklyn, has been appointed assistant clinical professor of urology at Long Island College of Medicine.

Substandard Food Rejected.—The municipal inspectors rejected more than a million pounds of foodstuffs as unfit for use in the city hospitals and other institutions during the first six months of this year, according to the city controller's report. Meat and poultry were rejected because they were found to be stale or to have been frozen; milk deliveries because of rusty cans; vegetables because they were excessively shrunken, among other details mentioned. Fruits and vegetables formed the largest item in the rejections, 652,429 pounds. The whole amount was valued at $100,000. Much of it was still fit for consumption but was below the standards set in the city's contracts, it was said. The city spends about $4,000,000 a year for food delivered to more than forty institutions, hospitals and prisons.

OHIO

Graduate Programs.—The alumni association of the Ohio State University College of Medicine announces a program of clinics, lectures and demonstrations to be held in the morning of November 16. The program is arranged to coincide with the homecoming football game of Ohio versus Illinois. Alumni are invited to attend clinics and pathologic conferences every Saturday. Dr. William H. Martin, Detroit, is president of the association and Dr. Jonathan Forman, Columbus, secretary.

PENNSYLVANIA

Society News.—Drs. Russell L. Haden and James A. Dickson, Cleveland, addressed the New Kensington Academy of Medicine, September 27, on arthritis. —— Dr. Edward J. G. Beardsley, Philadelphia, addressed the September meeting of the Lehigh County Medical Society, Allentown, on cardiac diagnosis and treatment.——Dr. John A. Toomey, Cleveland, gave an address before the Cambria County Medical Society, Johnstown, September 12, entitled "A Critical Evaluation of Recent Advances in Contagious Diseases."

Philadelphia

Society News.—The College of Physicians of Philadelphia will ultimately receive $40,000 for the preservation of its books and for maintenance, from the estate of the late Dr. James Cornelius Wilson.——At a meeting of the North End Medical Society with the North Branch of the Philadelphia County Medical Society, September 26, speakers were Drs. Maurice Brodie, New York, Harry Lowenburg, Nathaniel W. Winkelman and Charles Howard Moore, all of whom discussed anterior poliomyelitis.

Study of Tuberculosis in Indians. — Dr. Joseph David Aronson of the staff of the Henry Phipps Institute of the University of Pennsylvania, has been appointed special expert on tuberculosis in the Indian Service under the Department of the Interior. He has been granted leave of absence from the institute and has established headquarters in Albuquerque, N. M., from which he will direct a study of opportunities for preventive work against tuberculosis in New Mexico and Arizona Indians. After several weeks he will make similar observations on the Blackfoot and Crow Indians in Montana. Dr. Aronson is assistant professor of bacteriology at the University of Pennsylvania School of Medicine. Dr. Esmond R. Long, director of the Phipps Institute, has again been appointed special consultant on tuberculosis; in this capacity he made a survey of the Papago Indians for the Indian Service last winter.

RHODE ISLAND

Foundation for Study of Poliomyelitis. — The Rhode Island Infantile Paralysis Foundation was established August 31 with a gift of $5,000 from Mr. William S. Cherry Sr., Providence. Immediately after a charter was received from the state, the foundation was organized with Drs. Edward A. McLaughlin, Providence, state director of public health, and Dennett L. Richardson, Providence, as president and vice president. The foundation will seek more funds with which to conduct research and education, but it will devote itself immediately to relief of convalescents.

SOUTH DAKOTA

Personal.—C. M. Austin, Sioux Falls, was elected president of the South Dakota Hospital Association recently and Sioux Falls was designated as the place for the next annual meeting.

Society News.—A joint meeting of the Aberdeen and Whetstone Valley medical societies was addressed at Aberdeen, August 28, by Drs. Willard D. White, Minneapolis, on "Fractures of the Neck of the Femur"; Paul V. McCarthy, Aberdeen, "Use of the X-Rays as a Diagnostic Agent," and Albert S. Rider, Flandreau, state association problems.

TEXAS

Health Committee Appointed.—A health committee has recently been appointed as a part of the Texas Planning Board to take measures to improve the state's health conditions. Gerald C. Mann, secretary of state, is chairman and members are Drs. Ben R. Buford, Dallas; John M. Travis, Jacksonville; Robert D. Gist, Amarillo; Louis C. Heare, Port Arthur; Elbert W. Wright, Bowie, chairman of the state board of health; John W. Brown, Austin, state health officer, and Mr. H. W. Van Hovenberg, Texarkana. At the first meeting in Dallas, August 28, a committee was appointed to prepare and submit legislation considered necessary to improve and control public health and another to map an educational campaign to acquaint the public with health needs.

Society News.—Speakers at a meeting of the Twelfth District Medical Society in Cameron, July 9, included Drs. Ross B. Trigg, Fort Worth, on "Compression Fractures of the Vertebra"; Charles M. Simpson, Temple, "Carcinoma of the Prostate," and William T. Shell Jr., Corsicana, "Acute Abdominal Injuries."——Dr. George R. Herrmann, Galveston, addressed the Jefferson County Medical Society, Port Arthur, August 12, on "Cardiology in General Practice."——Speakers at a meeting of the Dallas County Medical Society, Dallas, September

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26, were Drs. Merritt B. Whitten, on "Recent Advances in Electrocardiography"; Ben H. Griffin, "Acne Vulgaris," and Harold T. Nesbit, "Autonomic Instability During Infancy and Childhood."——Dr. Arthur E. Hertzler, Halstead, Kan., was guest speaker at a meeting of the Northwest Texas District Medical Association in Mineral Wells, September 10, on "Diagnosis of Nonmalignant Disorders of the Stomach."

GENERAL

Society News.—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons at its annual meeting at Skytop, Pa., September 16-18, elected the following officers: Drs. James W. Kennedy, Philadelphia, president-elect; Frederick H. Falls, Chicago, vice president, and James R. Bloss, Huntington, W. Va., secretary. Dr. Louis E. Phaneuf, Boston, was installed as president. Next year's meeting will be in Bretton Woods, N. H., September 14-16.——The Clinical Orthopedic Society will hold its annual meeting in Indianapolis, November 15, and in Louisville, November 16.

Suicides Decline.—From a study of suicides in 170 cities of the United States, made by Frederick L. Hoffman, Ph.D., Philadelphia, consulting statistician, it appears that the average suicide rate per hundred thousand of population declined in 1934 to 16.8 from 18.8 in 1933. The rate increased in fifty-nine cities, declined in 109 and remained the same in two. Rates in the five largest cities were as follows: New York, 16.6; Chicago, 15; Philadelphia, 16.1; Detroit, 11.4, and Los Angeles, 26. All these are lower than the 1933 rates. Among the 170 cities those with the highest rates are as follows, given in the order of their importance: Concord, N. H., 41.4; Sacramento, Calif., 34.2; Savannah, Ga., 32.7; Galveston, Texas, 32.5; Tacoma, Wash., 32.5; Denver, 32.3; San Francisco, 31.9; Seattle, 31.6; Pasadena, Calif., 28.2, and Brockton, Mass., 28.1.

Prevalence of Typhoid.—Twenty-four cases of typhoid traced to the eating of clams from a condemned area of Jamaica Bay, Brooklyn, N. Y., led Health Commissioner John L. Rice to order the shore cleared of clams. About sixty men were put to work digging and destroying them and will continue through October and November, it is reported.—— Several cases of typhoid reported from Hackensack, Jersey City and adjacent New Jersey towns in August were traced to swimming in the polluted waters of the Hudson and Hackensack rivers. An outbreak occurred in August in Cambridge, Ohio, as a result of recent floods; twenty-eight cases were reported to be active September 10.——Twenty-four cases of typhoid with one death occurred in a nuns' home in Indianapolis in August; the infection was traced to contamination of the water supply through a connection with a sewer.—— Eighty cases of typhoid with six deaths were reported from Spencer County, Ky., September 5.——Three cases of typhoid on the Onondaga Indian Reservation near Syracuse, N. Y., led health officials to have all persons living on the reservation immunized.

Aero Medical Association.—The seventh annual meeting of the Aero Medical Association will be held in San Antonio, Texas, November 1-3, with headquarters at the Gunter Hotel. Speakers will include:

Capt. John M. Hargreaves, medical corps, director, department of ophthalmology and otology, School of Aviation Medicine, Randolph Field, Texas, Interesting Eye Factors in the Selection of Military Aviators.
Major Charles F. Snell, medical corps, department of aviation medicine, General Physical Factors in the Selection of Military Aviators.
Capt. Walter S. Jensen, director of neuropsychiatry, Neuropsychiatric Factors in the Selection of Military Aviators.
Major Neely C. Mashburn, director of psychology, Psychologic Factors in the Selection of Military Aviators.

At the department of commerce conference Sunday, Dr. John L. Walter, Spokane, Wash., will be among the speakers, on "Prevention of Loss of Hearing in Aviators." Speakers at the annual dinner will include Dr. James C. Braswell, Tulsa, president of the association; Eugene L. Vidal, director of aeronautics, U. S. Department of Commerce, and J. Carroll Cone, assistant director of aeronautics.

Regulations for Control of Communicable Disease.—A revision of the standard regulations for administrative control of communicable diseases was published in *Public Health Reports*, August 9. This is the second revision of the regulations originally drawn up in 1916 by a committee of the health officers' section of the American Public Health Association and first revised in 1926. The present revision was made by a subcommittee of the committee on research and standards of the association and has been approved by the U. S. Public Health Service. The terms used are defined and each disease is briefly described. Methods of control are suggested, but formal regulations are not offered because of local variations in law and sanitary codes. Any person or body with the power to make regulations can by reference to the description and recommendations for methods of control prepare the necessary text on which the educational and administrative acts of the health officer will be based, the committee said in an introductory statement. Members of the committee are Drs. Haven Emerson, New York, chairman; Leon Banov, Charleston, S. C.; James A. Doull, Cleveland; A. Roger Foley, Quebec; Donald T. Fraser, Toronto; John E. Gordon, New York; James P. Leake, Washington, D. C.; Alton S. Pope, Boston; Stanley W. Sayer, Gouverneur, N. Y.; Adolph Weinzirl, Baltimore, and Charles-Edward A. Winslow, Dr.P.H., New Haven, Conn.

American Public Health Association.—The sixty-fourth annual meeting of the American Public Health Association will be held in Milwaukee, October 7-10. Among speakers listed in the preliminary program are:

Dr. Henry Hanson, Jacksonville, Fla., An Epidemic of Dengue Fever.
Dr. Gaylord W. Anderson, Newton, Mass., Typhoid Carriers: A Study of Their Disease-Producing Potentialities Over a Series of Years as Indicated by a Study of Cases.
Dr. Clifford E. Waller, Washington, D. C., Federal Health Legislation.
Dr. Walter J. Treadway, Washington, Mental Hygiene in the U. S. Public Health Service.
Dr. Frederick O. Tonney, Chicago, Vitamin D and Child Health.
Bertha Kaplan Spector, Ph.D., Chicago, Significance of the Small Variety of Endamoeba Histolytica Cysts.
Dr. George E. Rockwell, Cincinnati, Oral Immunization Against Upper Respiratory Infections.
Drs. William H. Park and Maurice Brodie, New York, Active Immunization Against Upper Respiratory Infections.
Dr. Morris Fishbein, Chicago, American Medical Association Committee on Foods and Its Work.
Walter G. Campbell, chief, Food and Drug Administration, Washington, D. C., Need for New Legislation for Food and Drug Control.
Homer N. Calver, New York, The Challenge of Commercial Advertising to Health Education.

During this meeting the American Association of School Physicians, the Association of Dairy, Food and Drug Officials, the Association of Women in Public Health, the International Society of Medical Health Officers, the International Association of Dairy and Milk Inspectors and various other societies and committees will hold their annual sessions. The annual institute on health education was to precede the meeting, October 4-6.

FOREIGN

Epidemic in Japan.—The New York *Times* reports that an epidemic of "sleeping sickness" is current in Japan, 234 cases having been reported in the Tokyo-Yokohama area, with a mortality of about 20 per cent. It is said that most of the victims are children, aged persons or adults suffering from excessive fatigue.

Horsley Memorial Lecture.—The fifth Victor Horsley Memorial Lecture will be given at University College Hospital Medical School in London, November 19, by Sir Walter Langdon Brown, formerly regius professor of physic, University of Cambridge. His subject will be "The Integration of the Endocrine System."

Dr. Learmonth Honored.—Dr. James R. Learmonth, for several years assistant professor of surgery, Mayo Foundation, University of Minnesota, and since 1932 regius professor of surgery at the University of Aberdeen, Scotland, has been appointed honorary surgeon to King George in Scotland, newspapers report. Dr. Learmonth is a native of Scotland.

New Medical Journal.—The Witwatersrand University Medical Graduate Association, Johannesburg, South Africa, is sponsor for the *South African Journal of Medical Sciences*, the first issue of which appeared in July. It is to be devoted to the purely scientific aspects of medicine and expects to publish theses, surveys, researches and new technics developed among the medical profession of South Africa.

International Congress of Gastro-Enterology.—Dr. Pierre Duval, professor of clinical therapeutic surgery, University of Paris, was chosen president of the International Congress on Gastro-Enterology during its first session in Brussels, Belgium, August 8-10. Delegates to the congress, appointed by the U. S. Department of State, were Drs. John H. Trinder, lieutenant colonel, medical corps, retired, U. S. Army, chairman; Henry L. Bockus, Philadelphia; Russell S. Boles, Philadelphia; Max Einhorn, New York; Sara M. Jordan, Boston; B. B. Vincent Lyon, Philadelphia; William Gerry Morgan, Washington, D. C.; De Witt Stetten, New York, and Franklin W. White, Boston. Among other Americans present were Drs. Samuel Weiss and Anthony Bassler, New York, and William A. Swalm, Jacob Gershon-Cohen and Harry M. Eberhard, Philadelphia. The next congress will be held in Paris in 1937.

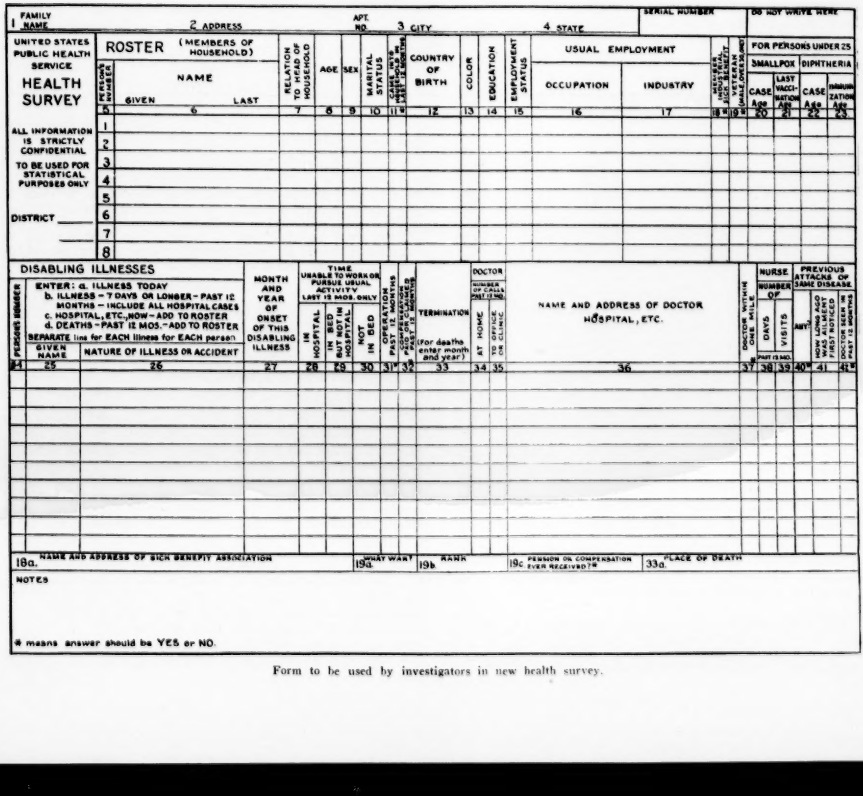
Government Services

The New Health Survey

As mentioned in the editorial columns in this issue, the United States Public Health Service is beginning a new survey of chronic and disabling illnesses and physical impairments in the general population. The relative prevalence of various types of disease, the geographic location, the age, the sex, the occupation and in particular the relation between disability and employment of persons affected will be studied. The survey is to be carried on in nineteen states divided into five areas. About two-thirds of the cities selected will be studied completely and in the others only samples of the population will be studied. The following is a list of the areas already selected for this survey with the number of blanks to be filled out in each area:

States and Cities to Be Surveyed and Number of Schedules

State	City	No. of Schedules
Alabama	Anniston	5,500
	Birmingham*	10,000
	Eufala	1,300
	Greenville	1,000
	Montgomery*	7,500
California	Bakersfield	6,500
	Chico	2,000
	Grass Valley	3,800
	Jackson	2,000
	Los Angeles*	20,000
	Napa	1,600
	Oakland*	7,500
	Vallejo	3,500
Georgia	Atlanta*	10,000
	Brunswick	3,500
	Fort Valley	1,100
	Gainesville	2,100
Illinois	Benton	2,500
	Chicago*	35,000
	Moline	8,000
	Normal	1,700
	Springfield	18,000
Louisiana	Abbeville	1,100
	Bossier	1,000
	Minden	1,400
	Monroe	6,500
	New Orleans*	12,500
Maryland	Baltimore*	25,000
Massachusetts	Boston*	25,000
	Fall River*	10,000
	Greenfield	4,000
	Ipswich	1,400
	Pittsfield	12,500
Michigan	Detroit*	20,000
	Flint*	5,000
	Grand Rapids*	5,000
	Houghton	900
	Port Huron	7,500
	Pontiac	14,000
Minnesota	Eveleth	1,900
	Minneapolis*	10,000
	St. Paul*	10,000
	Willmar	1,400
	Winona	5,000
Missouri	Chillicothe	2,000
	Clinton	1,400
	Kansas City*	12,500
	St. Louis*	25,000
	Springfield	14,000
New Jersey	Bridgeton	3,500
	Lambertville	1,100
	Newark*	12,500
	Somerville	2,500
	Trenton*	7,500
New York	Buffalo*	25,000
	Hudson	2,000
	Newark	2,000
	New York*	40,000
	Penn Yan	1,300
	Schenectady	24,000
	Syracuse*	10,000



1 FAMILY NAME — 2 ADDRESS — APT. NO. — 3 CITY — 4 STATE — SERIAL NUMBER — DO NOT WRITE HERE

UNITED STATES PUBLIC HEALTH SERVICE

HEALTH SURVEY

ROSTER (MEMBERS OF HOUSEHOLD)

ALL INFORMATION IS STRICTLY CONFIDENTIAL

TO BE USED FOR STATISTICAL PURPOSES ONLY

DISTRICT _____

PERSON'S NUMBER	NAME GIVEN	NAME LAST	RELATION TO HEAD OF HOUSEHOLD	AGE	SEX	MARITAL STATUS	CODE NO. IN PREVIOUS SURVEY	COUNTRY OF BIRTH	COLOR	EDUCATION	EMPLOYMENT STATUS	USUAL EMPLOYMENT: OCCUPATION	USUAL EMPLOYMENT: INDUSTRY	HOURS WORKED LAST WEEK	FOR PERSONS UNDER 25: SMALLPOX CASE	SMALLPOX LAST VACCINATION AGE	DIPHTHERIA CASE	DIPHTHERIA IMMUNIZATION AGE
5	6		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			

DISABLING ILLNESSES

ENTER: a. ILLNESS TODAY
b. ILLNESS – 7 DAYS OR LONGER – PAST 12 MONTHS – INCLUDE ALL HOSPITAL CASES
c. HOSPITAL, ETC., NOW – ADD TO ROSTER
d. DEATHS – PAST 12 MOS. – ADD TO ROSTER
SEPARATE line for EACH illness for EACH person

PERSON'S NUMBER	GIVEN NAME	NATURE OF ILLNESS OR ACCIDENT	MONTH AND YEAR OF ONSET OF THIS DISABLING ILLNESS	TIME UNABLE TO WORK OR PURSUE USUAL ACTIVITY (LAST 12 MOS. ONLY): IN HOSPITAL	IN BED BUT NOT IN HOSPITAL	TO BED	OPERATION PAST 12 MONTHS (FOR ACCIDENTS ASK IF CAUSED DISABILITY)	TERMINATION (For deaths enter month and year)	DOCTOR: NUMBER OF CALLS (PAST 12 MO.): AT HOME	TO OFFICE OR CLINIC	NAME AND ADDRESS OF DOCTOR HOSPITAL, ETC.	DOCTOR WITHIN 50 MILES	NURSE: NUMBER OF DAYS	NURSE: NUMBER OF VISITS	ANY PREVIOUS ATTACKS OF SAME DISEASE	HOW LONG AGO WAS ILLNESS? (PAST 12 MONTHS)	DOCTOR SEEN IN PAST 12 MONTHS
24	25	26	27	28	29	30	31*	32	33	34	35	36	37*	38	39	40*	41	42*

18a. NAME AND ADDRESS OF SICK BENEFIT ASSOCIATION — 19a. WHAT WAR? — 19b. RANK — 19c. PENSION OR COMPENSATION EVER RECEIVED?* — 33a. PLACE OF DEATH

NOTES

* means answer should be YES or NO.

Form to be used by investigators in new health survey.

OTHER HANDICAPPING DISEASE OR CONDITION

ASK IF ANY MEMBER OF HOUSEHOLD HAS ANY OTHER HANDICAPPING DISEASE OR CONDITION (IN ADDITION TO ANY RECORDED IN COLS. 24-42) REFERRING TO EACH OF FOLLOWING AS SUGGESTIVE OF THE KIND OF THING MEANT. ENTER PERSON'S NO. OR NOS. HAVING CASE, CHECK OFF AS ASKED IF NONE, RECORD BELOW FACTS FOR EACH CASE. NATURE OF DISEASE TO BE ENTERED AS DESCRIBED BY INFORMANT.

ASTHMA	EPILEPTIC ATTACKS, FITS	NEURITIS, NEURALGIA
BRIGHT'S DISEASE, NEPHRITIS	GOITER	RHEUMATISM, ARTHRITIS
BRONCHITIS	HAY FEVER	TUBERCULOSIS
CANCER	HEART DISEASE	TUMORS
DIABETES	HEMORRHOIDS	VARICOSE VEINS
DIGESTIVE DISORDER	HIGH BLOOD PRESSURE	ANY OTHER CHRONIC DISEASE

NATURE OF DISEASE (INFORMANT'S STATEMENT)	PERSONS NUMBER	GIVEN NAME	OR SEEN IN PAST 12 MOS.	NAME AND ADDRESS OF DOCTOR, HOSPITAL, ETC.	OR, WITHIN ONE MILE	HOW LONG AGO FIRST NOTICED	INTERFERES WITH JOB	ESTIMATED DAYS LOST PAST 12 MOS.
43	44	45	46*	47	48*	49	50	51

	47a. PARTS AFFECTED	47b. CAUSE	47c. APPLIANCE
LOSS OF LEG, ARM, FINGER ETC.			
CRIPPLED DEFORMED PARALYZED			
HERNIA (RUPTURE)	SITE		
DEAF	TOTAL N	PARTIAL N	OLD-MUTE N
BLIND	BOTH EYES N	ONE EYE, PARTIAL N	

52 HAS ANYONE IN THIS HOME EVER BEEN EXAMINED FOR TUBERCULOSIS ?* OR BEEN IN A TUBERCULOSIS SANATORIUM ?*

VAR. AGE	NO.	GIVEN NAME	NAME AND ADDRESS OF DOCTOR, CLINIC OR SANATORIUM

53 HAS ANYONE IN THIS HOME BEEN TO A HEALTH CLINIC OR HEALTH CENTER IN PAST 12 MONTHS ?*

NO.	GIVEN NAME	NAME AND ADDRESS OF AGENCY

54 HAS A NURSE FROM ANY AGENCY MADE ANY VISITS TO THIS HOME IN PAST 12 MONTHS ?*

FOR WHAT PURPOSE ?	NAME AND ADDRESS OF AGENCY (OR NURSE)

55a. NUMBER OF YEARS HOUSEHOLD HAS BEEN ESTABLISHED

b. NUMBER OF YEARS IN THIS HOUSE

c. NUMBER OF YEARS IN THIS CITY

d. NUMBER OF MOVES FROM ONE LOCALITY TO ANOTHER IN LAST 10 YEARS

e. MOVED FROM FARM WITHIN LAST 10 YEARS ?*

56a. HOUSE OR APT.?

b. IF RENTING MONTHLY RENTAL NOW / 1929

c. IF OWNED VALUE NOW

d. NUMBER OF ROOMS

57 WATER Check: CITY OTHER

58 TOILET Check: PRIVATE COMMUNAL

FLUSH INSIDE

FLUSH OUTSIDE

OTHER

59 ESTIMATED TOTAL FAMILY INCOME FOR LAST 12 MOS. Check:

$ 5000 OR MORE	
3000 BUT UNDER 5000	
2000 BUT UNDER 3000	
1800 BUT UNDER 2000	
1000 BUT UNDER 1500	
LESS THAN $1000	

60 WAS RELIEF RECEIVED IN PAST 12 MOS. ?* NAME AND ADDRESS OF AGENCY

61 DEGREE OF COOPERATION Check: GOOD FAIR POOR

62 DATE OF VISIT

63 PERSON'S NO. AND NAME OF INFORMANT

64 ENUMERATOR

NOTES

DO NOT WRITE IN THIS SPACE

* means answer should be YES or NO

Form to be used by investigators in new health survey.

Ohio	Cincinnati*	12,500
	Cleveland*	30,000
	Columbus*	10,000
	Franklin	1,100
	Lima	11,000
	Wilmington	1,250
Oregon	La Grande	2,000
	Portland*	10,000
	Salem	6,500
	St. Helena	1,000
Pennsylvania	Bellefonte	1,200
	Duryea	2,100
	Harrisburg	20,000
	Indiana	2,200
	Lebanon	6,000
	Philadelphia*	30,000
	Pittsburgh*	20,000
Texas	Dallas*	10,000
	Houston*	10,000
	Uvalde	1,300
	Weatherford	1,200
	Wichita Falls	11,000
Utah	Bingham Canyon	800
	Eureka	750
	Salt Lake City*	7,500
	Tooele	1,250
Virginia	Covington	1,000
	Richmond*	10,000
	Roanoke	17,000
	Saltville	750
Washington	Ellensburg	1,200
	Olympia	5,000
	Seattle*	10,000
	Spokane*	7,500

* Cities in which sample studies will be made.

The survey will include interviews with 750,000 families in ninety-five cities and towns. An average personnel of 3,500 workers will be engaged in the project at all times, with a peak employment of from 5,000 to 6,000 persons. From four to five months will be required for enumeration and editing in the field and a somewhat longer period for coding, tabulation and analysis. The field work will consist of a house-to-house canvass of a predetermined number of families in each city or community, careful editing of the results for completeness and consistency, verification of diagnoses by physicians who attended the patients, and in some places transcription of records of hospitals, sick benefit associations, a survey of medical facilities and a survey of communicable diseases.

Food and Nutrition Work of Relief Administration

More than 800 trained home economists are serving forty-three state relief administrations in working out proper diets for relief clients, the Federal Emergency Relief Administration recently announced in a review of the food and nutrition work of the administration. As a result of their work it is believed that many families have learned for the first time the importance of a balanced diet, possibilities of improving the family food supply through home gardens, how to make the most of the money available and how to prepare low cost foods in palatable forms, with the result that the chances of their eventual rehabilitation have been enhanced and the disease factor lowered. The kinds and amounts of food included in the allowances suggested by the Bureau of Home Economics of the U. S. Department of Agriculture, which have been the guide in framing state food budgets, have been determined from nutrition studies conducted by scientists in universities and government laboratories, the report points out. Relief home economists have cooperated with hospital dietitians and medical societies in the formulation of therapeutic diets at minimum cost. The home economists have found it necessary also to remedy other factors that menaced health, such as insanitary practices in handling food and washing dishes, insufficient protection from flies and lack of understanding of fundamentals of personal hygiene.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 7, 1935.

Alcohol and Road Accidents

The minister of transport invited the British Medical Association to make observations on the place of alcohol in the causes of road accidents. The association therefore appointed a committee consisting of leading physicians, physiologists, pharmacologists and police surgeons to report on the question. They confined themselves to examination of the evidence of the effect of alcohol on bodily functioning, particularly of amounts insufficient to produce drunkenness, less than is sufficient to lead to a person being certified as "incapable of proper control of a vehicle." They recognized the part played by alcohol in considerable amounts in the causation of road accidents but thought it desirable to draw public attention to the effect of amounts commonly regarded as without deleterious effect on driving capacity. This aspect of the problem has not received from scientific investigators the attention it merits. A complete solution would require further investigation. Nevertheless important evidence of two types is available: 1. Statistics of accidents in which the question was raised as to whether the driver was "under the influence of drink." 2. Experiments made in other connections to determine the effects of alcohol on judgment, memory, reaction time, coordination of muscles and other factors that may be involved in motor driving.

The report of the ministry of transport for 1933 shows that, of the 3,297 causes of fatal road accidents attributed to drivers, twenty-nine are described under the heading "under the influence of drink or drugs," while, of 3,607 causes of road accidents attributed to pedestrians, forty-six were included under the same heading. These figures take no cognizance of persons who may have been under the influence of alcohol to an extent insufficient to attract notice. They are derived from police reports and are based on personal impressions. Investigations based on determination of the alcohol content of the blood and urine have been made in America. They show that, in 119 consecutive accidents, seventy-four of the persons examined had an alcohol content of the blood exceeding 0.02 per cent, but there are no figures showing the alcohol content of the blood of drivers not involved in road accidents. In 1933 there were in Great Britain 1,595 convictions for driving under the influence of drink. In 1934 there were 2,016 drivers of motor vehicles medically certified to be under the influence of drink. Thus statistics show that intoxication plays a part in the causation of motor accidents. But opinions may differ as to the part played by amounts of alcohol less than those which would lead to a person being certified as "incapable of proper control of a vehicle." If such amounts render a person a less careful and skilful driver, the percentage of accidents due to alcohol is higher than is indicated by the figures. The committee therefore submits evidence as to the effect of what it calls "subintoxicant" amounts of alcohol.

The committee refers to the report of the Medical Research Council on alcohol, in which the conclusion is drawn that "the direct effect of alcohol upon the nervous system is, in all stages and upon all parts of the system, to depress or suspend its functions; that it is, in short, from first to last a narcotic drug." It leads many persons to take risks and make rapid decisions less judiciously than they otherwise would. This is a serious objection to the consumption of even small amounts by any one who is to drive a car. Psychologic tests show that consumption of small amounts of alcohol (in quantities equivalent to 2¼ to 3½ ounces, or 67 to 105 cc., of whisky) impairs both mechanical skill and intelligence and reduces speed, while the subject feels that he is doing better. Several hours after the consumption of such quantities the blood still contains substantial amounts of alcohol, for the body oxidizes alcohol at the rate of only 10 to 12 cc. an hour (the equivalent of 1 ounce, or 30 cc., of whisky). Only when the alcohol in the blood has fallen to a low percentage do the effects on mental processes and neuromuscular coordination disappear. The conclusion of the committee is that alcohol in amounts corresponding to 2 or 3 ounces (60 or 90 cc.) of whisky usually affects adversely rapid and accurate coordination and must frequently affect driving capacity.

The Gas Storage of Foods: Important Advances

The Food Investigation Board has issued a report that marks an important advance in the gas storage of food. Researches in the interest of the consumer and the grower are now being applied commercially. They have been carried out under the Department of Scientific and Industrial Research, whose workers have discovered that beef can be stored from sixty to seventy days in a chilled state by the addition of carbon dioxide to the air of the store. This enables chilled beef to be brought from New Zealand and Australia and has been energetically taken up by the firms concerned. During 1934, 4,400 tons of chilled beef arrived in gas storage from New Zealand and Australia. Twelve ships have been built containing chambers specially constructed for gas storage. Three weeks can be added to the storage life of bacon by gas storage in carbon dioxide.

The gas storage of home-grown fruit has rapidly progressed. The number of gas stores has increased from twelve to forty, providing space for 400,000 bushels of apples, which is likely to be doubled in the next twelve months. The winter temperature of English warehouses has been found too low for the ripening of several varieties of imported pears and plums. Conditioning for a brief period at 70 F. greatly improved South African and Australian pears and South African plums.

An important discovery is that wraps treated with iodine retard the fungal rotting of fruit without impairing the appearance or flavor. In the store the vapor given off by fruit such as apples, tomatoes and bananas that have passed the climacteric immediately produces climacteric in their neighbors and hastens ripening. It has been discovered that the active substance in the vapor of ripe apples is the gas ethylene. With regard to the best method of preserving eggs, it is found that the alkalinity of the white increases with age but can be kept down to that present on laying by storage in air enriched with carbon dioxide.

Criticism of Air Raid Precautions

In previous letters the precautions that are being elaborated by the government for the protection of the civil population against air raids have been described. They have aroused considerable criticism in socialist and antimilitarist circles. The "Union of Democratic Control" summoned a conference on the subject. Mr. Kingsley Martin, editor of the *New Statesman*, who presided, described a recent government circular as unconvincing and fraudulent. Mr. J. D. Bernal, a Cambridge scientist, declared that no methods of defense could prevent heavy casualties. The evacuation of urban population would result in incredible chaos, with starvation and pestilence following the breakdown of the transport of supplies. Gas-proof rooms were certainly a defense, but the highly concentrated character of an air raid and its unexpectedness rendered provision on a huge scale everywhere necessary. Dr. J. R. Marrack, professor of chemical pathology, London Hospital, gave his experience of gas warfare in France, where casualties continued after gas masks and all methods of protection were enforced. This was due to surprise attacks before men had time to put on their gas masks, or to pockets of gas remaining after an attack. It seems to be overlooked in all this criticism that the government is not responsible for the difficulties of the problem of defense against air raids and that no suggestion is made as to better

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methods. The dislike of the socialists for anything of the nature of militarism has gone to the suicidal length of saying that they will refuse to obey the air-raid regulations.

Treatment of Maxillofacial Injuries of War

In modern warfare a large percentage of wounds occur in the jaws and face. Experience in the war has been turned to account by the army council, which in 1932 appointed a committee consisting of Col. J. P. Helliwell (chairman) of the army dental corps, Sir Harold D. Gillies, Mr. R. W. Kelsey Fry and Mr. W. Warwick James to investigate and report on facilities for the treatment of the maxillofacial injuries of war. All had considerable experience with these injuries in the war. Mr. Fry and Mr. James are dental surgeons and Sir Harold Gillies was chief plastic surgeon of the special hospital for facial injuries and is the leading plastic surgeon of the day. In their report, which is based for the most part on personal experience, the committee points out that only by the earliest treatment can serious deformities and loss of function be obviated or mitigated and that equipment and personnel should be available from the beginning of hostilities. Preliminary treatment in the field should be carried out with appreciation of the lines likely to be followed at the special hospital allotted for these cases. Therefore medical and dental officers in the field should have a knowledge of the principles of the treatment and evacuation of these cases and receive uniform instruction.

In the early stages, preliminary treatment should be restricted to the saving of life—the prevention of suffocation and the arrest of hemorrhage. Danger of suffocation is most commonly due to loss of control of the tongue, which may be so displaced as to obstruct the air passages. Posture is of vital importance, and stretcher bearers should not lay the man on his back but on his chest, with his head hanging over the end of the stretcher. If he can walk, he should stoop well forward. Lives may be saved by keeping the tongue well forward. Correct posture will tend to lessen hemorrhage by keeping the tongue forward, but it may be necessary to plug wounds external to the mouth and also to apply digital pressure. The main dressing station is the first place where the services of a dental officer are available. Displaced hard and soft tissues should be corrected as nearly as possible to the normal position and fixed there at the earliest moment. When much bone is lost, the raw ends of bones should be covered by mucous membrane. In the war, overapproximation rendered the after-treatment of many cases difficult, and this should be avoided. The dental officer should be conservative as regards extraction of teeth. As the recuperative power of partly detached fragments of bone is usually good, none should be discarded. The slightest attachment of periosteum is justification for the retention of a fragment. Displaced fragments of the jaw should be immobilized by interdental wiring. The case then passes on to a special maxillofacial hospital.

Deaths from Botulism

Botulism is an almost unknown disease in Great Britain. In London an inquest has been held on three women who died from botulism as the result of eating "nut meat brawn," a purely vegetable preparation, in spite of its name, made from peas and carrots. Dr. P. V. Pritchard, health officer for St. Pancras, gave evidence that the infection came from an organism attached to some of the vegetables used in the brawn mixture, but which vegetable it had not been possible to discover. For preparing this particular brawn the peas and carrots were freshly bought every morning at London's great vegetable market, Covent Garden. It had been made for twenty-nine years and no previous case of botulism had been traced to it. Dr. Pritchard knew of no case of botulism that had occurred from food canned in this country or from canned food imported. The deputy director of the Bristol food research station stated that botulism always existed as a danger but could be combated by simple means. Britain produced from 150 to 200 millions of cans a year. All the British vegetable canners were using an absolutely safe process. There had been no instance in this country or in America in which Bacillus botulinus had survived this process and caused trouble.

The only previous cases of botulism known in this country occurred in 1922, when eight persons died at a hotel in the West Highlands of Scotland from botulism due to eating wild duck paste in a glass container. Here too there was no indication that the food was in any way abnormal or unfit for consumption and the manufacturer was acquitted of neglect. The Ministry of Health is making further investigations in regard to the recent cases.

Vitamin C in Apples

It has been found that the concentration of vitamin C in apple tissue is six times as great in the peel as in the core; also that the vitamin potency of Bramley seeding apples with rosy or blushed skin is more than twice as great as in those with green skin. Canned apples showed no loss of vitamin C after nine months' storage at ordinary temperature. Investigations were carried out with synthetic vitamin C, which has been shown to be identical with the natural vitamin in chemical structure and biologic activity, in order to discover whether it might be added to such foods as runner beans, which do not naturally contain vitamin C, or to spinach, apples or apple jelly. Examination of the canned products showed that the loss of the added vitamin was never greater than 25 per cent and usually much less, the artificial vitamin remaining stable during canning.

PARIS

(From Our Regular Correspondent)

Aug. 16, 1935.

Tuberculous Meningitis in Infant Vaccinated with BCG Vaccine

A committee appointed by the Pasteur Institute, and composed of both clinicians and bacteriologists, is investigating the cases in infants in whom immunization against tuberculosis by the ingestion of BCG vaccine has been attempted. At the April 9 meeting of the Société de pédiatrie of Paris, Eschbach of Bourges reported the case of an infant vaccinated at birth and again at the end of the first year; it died of tuberculous meningitis at the age of 21 months. Examination of the spinal fluid, obtained by lumbar puncture, after the appearance of typical symptoms of meningitis, revealed the presence of acid-fast bacilli, which on being inoculated into a guinea-pig resulted in the animal's death nine months later and the necropsy of the animal confirmed the diagnosis of tuberculosis. The infant had not come in contact with a tuberculous individual, so far as could be learned.

In the discussion, Marfan, who is a member of the Pasteur Institute committee, stated that similar cases had been reported but that they seemed to be very rare according to the observations thus far of the committee. The tuberculous nature of the meningitis had not been proved in some of the reports sent to the committee. The presence of the tubercle bacillus in the spinal fluid had only rarely been demonstrated. In seven cases lumbar puncture had not been done, the diagnosis having been entirely on the clinical symptoms. In six cases in which the spinal fluid had been sent to the Pasteur Institute, tubercle bacilli of the human type were found in only three. The latter had been in contact with tuberculous individuals. In a fourteenth case the diagnosis was based on the presence of a lymphocytosis and a hyperalbuminosis. Hence in only three of the fourteen cases was the meningitis proved to be tuberculous on bacteriologic examination. If the meningitis appears before the sixth month, one can assume that the infant has not been immunized and hence has been infected before the BCG immunization has taken place. Vaccinated infants

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should be kept from being in contact with tuberculous individuals. In cases in which tuberculous meningitis occurred late, the infants have either not been immunized or, if so, only transitorily or to a slight degree.

There is no proof that the BCG vaccine has ever caused a meningitis. In the three cases cited, with positive observations at the Pasteur Institute, the bacillus was of the human type, whereas the BCG bacillus is of the bovine type; hence finding the former excludes any part played by the BCG vaccine.

Angina Pectoris Cured Since Operation in 1932

A successful result following operation in April 1932 for severe angina pectoris was reported at the June 7 meeting of the Société médicale des hôpitaux by Godard and Moussoir. A woman, aged 77, was seen in April 1932. The first anginal attack occurred in January 1931. After a free interval of two months there was a recurrence every eight days. In February 1932, attacks lasting from fifteen to twenty minutes occurred four or five times a day. The location of the pain was typically retrosternal, with radiation to the left arm and corresponding side of the lower jaw. A little later the attacks became so severe and frequent that large doses of morphine had to be given. This gave only transitory relief. April 22, 1932, the Danielopolu operation was performed under local anesthesia. The technic is about the same as that of removal of the stellate ganglion, but one does not perform ganglionectomy.

The following are resected: the rami of the seventh and eighth cervical and first dorsal, the two roots of the vertebral, the cervical sympathetic cord and the superior and middle cardiac nerves. The operation was followed by the Claude Bernard-Horner syndrome and vasomotor disturbances of the left half of the face and left arm. For the first three postoperative days, pain was felt over the sternum; but there was an absence of attacks until the fourth day, when two or three severe ones were observed. During the following eleven days the attacks recurred at longer intervals but were severe and of short duration. The attacks ceased two weeks after the operation and there has been no recurrence since this date, now more than three years. The patient's general health is excellent. Electrocardiography recently showed normal conditions.

Hodgkin's Disease with Extreme Anemia and Fever

An unusual case was presented at the June 21 meeting of the Société médicale des hôpitaux by Thoyer and Gauthier-Villars. A man, aged 33, had noted in 1931 a marked enlargement of the lymph nodes on the right side of the neck, which subsided following high voltage roentgen therapy. A year later a severe anemia of the hypoplastic type with many nucleated erythrocytes was noted. The number of erythrocytes during five months of observation was 1,500,000, and there was continuous high fever. There was no improvement following ten months of treatment, the condition ending fatally. Only a discrete involvement of the mediastinal and inguinal nodes, and a splenomegaly, had been found while he was under observation in the hospital. The principal feature had been the severe anemia. The necropsy revealed the presence of many enlarged mediastinal lymph nodes, which on microscopic study enabled a diagnosis of Hodgkin's disease to be made. There were many diffuse minute areas of necrosis in the liver and spleen. Stains for tubercle bacilli were negative. Few similar cases of Hodgkin's disease accompanied by severe anemia have been reported, and even in these the anemia had been terminal. The number of leukocytes in the case reported by Thoyer and Gauthier-Villars was only 1,600 per cubic millimeter, which is also rare in Hodgkin's disease.

In the discussion, Lamy stated that he had seen a number of severe febrile anemias in children with marked diminution in the number of erythrocytes but no changes in the number or character of the leukocytes.

Many of these cases are masked forms of leukemia in which the blood studies do not aid in making a diagnosis. Only such methods as exploratory puncture of the blood-forming structures, such as the spleen or the bones, can help in determining the etiology of the blood changes. Lamy and Debré now carry out puncture of the sternum in children to observe changes in the bone marrow. This is a safe method of diagnosis in children. In adults, puncture of the spleen, as suggested by Emile Weil, is equally useful. Sternal puncture has made it possible to diagnose the blood changes in several recent cases, whereas ordinary examination did not reveal the nature of the disease.

Abscess of the Cerebellum

In a symposium at the annual meeting in April of the French Otoneuro-Ophthalmologic Congress, papers were read by Ramadier and Caussée (otologists), André-Thomas and Barré (neurologists) and Velter (opthalmologist). Abscess of the cerebellum most frequently occurs in cases of chronic otitis media. There are symptoms that are of value in localizing the seat of the infection. For example, bradycardia is far more marked in cerebellar than in cerebral abscess. The headache is typical also, being occipital. The neck rigidity stands out in most cases in contrast with the complete absence of the Kernig sign.

Choked disk is more common in cerebellar abscess than optic neuritis, the reverse being true of cerebral abscess. The loss of muscle tonus on the same side of the body as that on which the abscess is situated is an early sign that should always be looked for. The evidences of vestibular disturbance are of almost equal value to the cerebellar symptoms themselves. Spontaneous nystagmus is especially frequently observed.

Death from respiratory paralysis is not uncommon.

Many cases are not diagnosed because the clinical signs are atypical. In a small number of patients the symptoms are manifold and diagnosis is not difficult. In others, some complication, such as diffuse meningitis, thrombophlebitis or labyrinthitis, obscures the underlying condition or the patient is seen in a comatose condition.

The operation should be done in two steps. In the first, the overlying bony structures are removed. Much information as to the existence of vascular or meningeal complications is thus obtained. After an interval of from twenty-four to forty-eight hours, the second step is undertaken to drain the abscess.

The prognosis even in cases in which operation is performed is unfavorable, the mortality varying from 70 to 75 per cent because of the difficulty of finding the abscess even when diagnosed and the fact that even drainage does not prevent the appearance of such complications as encephalitis or meningitis.

Professor Weinberg Elected Fellow of Academy of Medicine

At the July 2 meeting of the Academy of Medicine, Prof. M. Weinberg of the Pasteur Institute was elected a fellow. He is best known to American readers by his work on gangrene-producing infections and the effort to control them by a specific serum. The latter research was begun during the World War and has been continued without interruption at the Pasteur Institute, finally resulting in the preparation of a polyvalent serum that includes antitoxins to combat the five most common forms of severe bacterial infection ending in gas production, gangrene and widespread edema.

At the beginning of the war, before trench fighting began, the only known form of rapidly fatal gas producing infection was that known as "gas gangrene" due to the bacillus of Welch-Nuttale (B. perfringens). Weinberg prepared a serum and cured two cases of "gas gangrene," one at the English military hospital, at Versailles, and the other at the American Ambulance at Neuilly near Paris. With trench warfare, when the soil was contaminated with the human and animal excreta,

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the bacterial flora of wound infection became more complex. Weinberg was the first to isolate Vibrio septique. Then, with Seguin, he found Bacillus oedematiens, which produces widespread edema without gas formation. Another organism, Bacillus histolyticus, was found in rapidly fatal infections. This bacillus not only elaborated fatal toxins but secreted a ferment that digested fibrous tissue, leading to rapid destruction of important supporting structures, so that in animals, following its injection, spontaneous amputation of the involved limb occurred. Finally Bacillus sporogenes was found by Weinberg in cases of gas gangrene. This organism also dissolves all tissues and favors the development of the "gas gangrene" bacilli.

In cases of the latter form of infection, Weinberg has found that a polyvalent serum containing the antitoxins prepared following injections of these various types of bacteria should be employed as early as possible and in large doses, from 80 to 100 cc. daily. This polyvalent serum will thus neutralize the toxemia and tissue destruction due to the five most commonly found bacteria; viz., the Welch-Nuttal bacillus, Vibrio septique, Bacillus oedematiens, Bacillus histolyticus and Bacillus sporogenes. The last named is the most proteolytic of all and produces a very fetid odor in wounds.

More recently, Papin, a urologist, has employed this polyvalent antigangrenous serum and an anticolibacillary serum as prophylactics in all operations on the prostate. No accidents have been observed in 450 cases.

Weinberg in many publications has advocated in the treatment of gangrenous appendicitis complicated by peritonitis these two serums mixed with a third, a complementary serum, prepared to combat the secondary organisms found in appendicitis.

BERLIN

(From Our Regular Correspondent)

Aug. 5, 1935.

Regulations Controlling the Sale of Medicines

A recent order issued by the minister of the interior established the Reichsarbeitsgemeinschaft für Arznei- und Heilmittelwesen. The merger will handle all questions pertaining to the manufacture and sale of medicines and remedies so far as they affect the public health but will not deal with the purely economic aspects of the problem. Questions coming within its jurisdiction will be carefully considered and the conclusions forwarded to the ministry of the interior. The merger will serve as mediator between all interests that are concerned with the manufacture and sale of medicines and remedies and will endeavor, from the more exalted standpoint of the general welfare, to take a middle-of-the-road position and to effect a compromise, while taking account of the existing economic conditions. The membership of the merger comprises all the industrial leagues concerned with the manufacture and sale of medicines and remedies, together with representatives of the physicians, the pharmacists and (which is especially significant) the nature-cure practitioners. The director (at least in scientific circles) has been subjected to many bitter attacks. He is said to have sold at high prices cheap organic acids, which served as remedies in his self-invented "acid therapy," for which the indications were of an almost endless nature.

Under the direction of the bureau of public health of the national-socialist party, the Arbeitsgemeinschaft für Heilpflanzenkunde und Heilpflanzenbeschaffung, with which all persons interested in the question of the curative values of herbs and plants may associate themselves, has been formed. The purpose of this merger is to unite under uniform standards and a common directorship all endeavors pertaining to medicinal plants and to test and elaborate the problem from the standpoints of public health, science and economics. The direction is in the hands of the reichsärzteführer, or federal leader of medicine. From various German books that have been published recently, some of which have been caustically reviewed in THE JOURNAL, may be seen how far these endeavors go beyond the limits of scientific research.

Interest attaches to the new modes of criminal procedure that the federal minister of justice has established in connection with charges brought for violations of the regulations pertaining to the manufacture and sale of medicinal remedies. One reads therein: The sale of medicinal remedies in violation of established laws constitutes a serious menace to public health. Violations of the provisions governing the dispensing of medicines outside of pharmacies are especially frequent. It has been observed that medicines that may be dispensed in pharmacies only on medical prescription are often sold, on account of lack of knowledge, in general stores directly over the counter, without any form of prescription. Sharp measures will be taken to check such flagrant violations of the law.

The Tasks of Aviation Medicine

Aviation medicine is controlled by a separate department of the federal air ministry. In recent years special chairs in aviation medicine have been established at some universities, while at others certain instructors have been selected to give courses in aviation medicine. The tasks of aviation medicine were recently concisely described by Dr. Hippke, director of the medical department of the air ministry: The principal task of aviation medicine is to find the hygienic conditions under which man is able to live and carry on in the air. In the new environment, the air, man may be exposed to unknown dangers and injuries against which his body is not prepared to defend itself. To recognize these damaging influences of the air and to provide means of defense is the task of aviation medicine. Mention need be made only of the consequences of changes in air pressure, of oxygen deficiency, of intense cold, of exhaust gases, of centrifugal force and of sudden acceleration of speed. In addition to these problems and the research to discover means of protection in the form of drugs, special diets and suitable equipment there is also the organization of means of testing, at the numerous aviator testing centers, such candidates as apply for important posts. The leading institutions of research in this field are the Luftfahrtmedizinisches Forschungsinstitut des Reichs-Luftfahrtministeriums, located in the Berlin Medicomilitary Academy, and the Institut für Luftfahrtmedizin in Hamburg. There are, however, several other institutions that cooperate; for example, the Kerckhoff-Institut für Kreislaufforschung in Nauheim. A special committee for aviation medicine, appointed by the Vereinigung für Luftfahrtforschung, controls the distribution of labor, utilization of the results of research, and financing. The medical department of the Reichs-Luftfahrtministerium serves as a clearing house of information on aviation problems.

Marriages

BEAUFORD IVAN PIPPIN, Richland Center, Wis., to Miss Mildred Forseth of La Crosse at Nashua, Iowa, June 30.

JAMES CHARLES BRABHAM, Johnsonville, S. C., to Miss Frances Kirkpatrick Campbell at Pacolet Mills, July 18.

HENRY JOSEPH BAYON JR., Neuilly-sur-Seine, France, to Miss Ada Holmes Davis in Paris, September 7.

EDWARD STEPHEN STAFFORD, Baltimore, to Miss Frances S. Lowell of Winchester, Mass., September 28.

CHARLES ATLAS BLAND, Clover, Va., to Miss Mary Ernest Johnson of Louisburg, N. C., August 31.

BYRON WEBSTER BEATTY to Mrs. Helen Canny, both of Dayton, Ohio, in Tampa, Fla., July 18.

WILLIAM CHARLES WOJTA to Miss Audrey Le Claire, both of Fond du Lac, Wis., June 25.

Deaths

William Hamlin Wilder ✠ professor emeritus of ophthalmology at Rush Medical College, died at his home in Chicago, September 24, of cerebral arteriosclerosis and paralysis agitans, aged 74. Dr. Wilder was born in Covington, Ky., and received his early education at Farmers College, College Hill, Ohio. He received the B.A. degree at Belmont College in 1878 and his medical degree from the Medical College of Ohio, Cincinnati, in 1884. He also pursued postgraduate study in the University of Göttingen in 1889 and the University of Vienna in 1890. He began the practice of medicine in Cincinnati in 1884 and removed to Chicago in 1892. In 1907 he became professor of ophthalmology at Rush Medical College and was made professor emeritus in 1926. He served as honorary surgeon to the Illinois Eye and Ear Infirmary and as ophthalmologist to the Presbyterian Hospital. He was chairman of the Section on Ophthalmology of the American Medical Association in 1907-1908 and a member of the House of Delegates during 1926, 1927, 1928, 1930 and 1931. He was a member and also president in 1931 of the American Academy of Ophthalmology and Otolaryngology; member of the American Ophthalmological Society and president in 1918; member and vice president of the Illinois Society for the Prevention of Blindness, and fellow of the American College of Surgeons. In May 1935 Dr. Wilder was awarded the ninth annual Leslie Dana Gold Medal, given by the St. Louis Society for the Prevention of Blindness for outstanding contributions in the preservation of sight. During the World War Dr. Wilder served as a major in the Medical Reserve Corps. Dr. and Mrs. William H. Wilder established recently the William H. Wilder Fellowship in neurology in memory of one of their sons. Another son, Dr. Russell Morse Wilder, is a member of the staff of the Mayo Clinic. Dr. Wilder contributed notably to preventive medicine in the field of ophthalmology, his most significant efforts concerning trachoma, ophthalmia neonatorum and the rehabilitation of the blind. He also worked assiduously in the promotion of higher standards in ophthalmologic practice, and he was instrumental in the establishment of the American Board of Ophthalmology, giving this organization years of service as secretary.

WILLIAM HAMLIN WILDER
1860-1935

Charles Willis Garrison ✠ Lexington, Ky.; Memphis (Tenn.) Hospital Medical College, 1905; at one time secretary of the Arkansas State Board of Health and state health officer; formerly health officer of Lexington; past president of the Conference of State and Provincial Health Authorities of North America; in 1924 appointed United States representative to the League of Nations health conference in Geneva, Switzerland; formerly professor of preventive medicine, University of Arkansas School of Medicine, Little Rock; aged 56; died, August 26, in the Julius Marks Sanatorium, of pulmonary tuberculosis.

John Henry Blodgett ✠ Bellows Falls, Vt.; University of Vermont College of Medicine, Burlington, 1897; member of the Associated Anesthetists of the United States and Canada; past president of the Windham County Medical Society; formerly member of the state legislature and state senator; on the staff of the Rockingham General Hospital; aged 67; died, August 2, of diabetes mellitus, cerebral hemorrhage, and arteriosclerosis.

Eugene Julius Grow ✠ Medical Director, Captain, U. S. Navy, retired, Lebanon, N. H.; Dartmouth Medical School, Hanover, N. H., 1897; entered the navy in 1898; instructor at the U. S. Naval Medical School from 1913 to 1917; served during the World War; fellow of the American College of Surgeons; aged 61; died, September 5, of hypertensive heart disease and cerebral thrombosis.

John Otto Groos, Escanaba, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the Michigan State Medical Society; past president and secretary of the Delta County Medical Society; on the staff of St. Francis Hospital; aged 66; died, August 14, of chronic myocarditis.

Wesley Warren Wallace, Bolivar, Tenn.; Memphis Hospital Medical College, 1910; member of the Tennessee State Medical Association; formerly member of the state legislature; on the staff of the Western State Hospital; aged 52; died, July 27, in the Baptist Memorial Hospital, Memphis, of carcinoma of the bladder and lobar pneumonia.

Daniel Witwer Weaver ✠ Greensburg, Ind.; Hahnemann Medical College and Hospital of Philadelphia, 1896; past president and secretary of the Decatur County Medical Society; mayor of Greensburg; on the staff of the Decatur County Memorial Hospital; aged 62; died, August 26, in a hospital at Madison, Wis., of coronary sclerosis and thrombosis.

Svenning Dahl, Chicago; College of Physicians and Surgeons of Chicago, 1890; member of the Illinois State Medical Society; formerly on the staff of the Norwegian-American Hospital; on the staff of the Lutheran Deaconess Hospital; aged 78; died, August 18, of chronic myocarditis and arteriosclerosis.

William Allen Held, West Unity, Ohio; Chicago Homeopathic Medical College, 1897; member of the Ohio State Medical Association; past president of the Williams County Medical Society; county health officer; aged 67; died, August 11, in the Wauseon (Ohio) Hospital, of cerebral hemorrhage.

George Llewellyn Cole ✠ Los Angeles; Bellevue Hospital Medical College, New York, 1886; at one time professor of therapeutics and clinical medicine, University of Southern California School of Medicine; aged 73; died suddenly, August 19, of heart disease, while visiting a patient.

Clyde Leander Vorhies, Cambridge, Ohio; Starling-Ohio Medical College, Columbus, 1911; member of the Ohio State Medical Association; formerly city health officer; aged 47; died, July 26, in the Barnes Hospital, St. Louis, following an operation for tuberculosis of the lungs.

Francis Joseph Powers, South Bend, Ind.; Northwestern University School of Medicine, Chicago, 1908; member of the Indiana State Medical Association; physician to Notre Dame University for many years; aged 62; died, September 17, in St. Joseph's Hospital, of heart disease.

Charles Wesley Griffith, La Porte, Texas; Starling Medical College, Columbus, 1897; veteran of the Spanish-American and World Wars; president of the school board; aged 61; died, July 22, in a hospital at Houston, of hemorrhagic necrosis of the pancreas and chronic cholangeitis.

Frank Matthews Harrison, Napoleon, Ohio; Jefferson Medical College of Philadelphia, 1896; member of the Ohio State Medical Association; secretary of the Henry County Medical Society; on the staff of the S. M. Heller Memorial Hospital; aged 65; died, August 22.

John Jay Ingram, Decatur, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; member of the State Medical Association of Texas; past president and secretary of the Wise County Medical Society; formerly county health officer; aged 73; died, July 30.

Beneijah Gibson Wilbert, Plaquemine, La.; Tulane University of Louisiana Medical Department, New Orleans, 1906; member of the Louisiana State Medical Society; aged 51; died, June 4, in the Plaquemine Sanitarium, of myocarditis and arteriosclerosis.

Carl Austin Weiss Jr. ✠ Baton Rouge, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1927; on the staff of Our Lady of the Lake Sanitarium; aged 29; was shot and killed, September 8, when he assassinated Senator Huey Long.

James Luther White, Henderson, Tenn.; Memphis Hospital Medical College, 1908; veteran of the Spanish-American War; aged 62; died, July 16, in the Veterans Administration Facility, Memphis, of chronic nephritis and pulmonary edema.

John Joseph Slevin, New York; Long Island College Hospital, Brooklyn, 1900; member of the Medical Society of the State of New York; aged 58; died, August 31, in the Midtown Hospital, of bronchopneumonia and chronic myocarditis.

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David Cohn, San Francisco; Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Germany, 1861; member of the California Medical Association; aged 97; died, August 2, of chronic myocarditis and arteriosclerosis.

Sidney Joseph Francis, Luling, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1889; member of the State Medical Association of Texas; aged 68; died, August 3, in Rochester, Minn., of brain tumor.

Louis William Thompson, Laurens, S. C.; Meharry Medical College, Nashville, Tenn., 1911; aged 54; died, July 12, in the Anderson (S. C.) County General Hospital, of cerebral hemorrhage and cardiovascular renal disease.

James Condra O'Hare, Toledo, Ohio; Loyola University School of Medicine, Chicago, 1935; aged 30; intern at the Lucas County General Hospital, where he died, June 4, of streptococcic cellulitis of the arm and chest.

Cecil Garrenton ✠ Bethel, N. C.; Medical College of Virginia, Richmond, 1908; past president of the Pitt County Medical Society; aged 52; died, August 10, in the Rocky Mount (N. C.) Sanitarium, of pyonephrosis.

Walter William Harris, Bloomington, Ind.; Louisville (Ky.) Medical College, 1889; member of the Indiana State Medical Association; served during the World War; aged 69; died, August 20, of coronary thrombosis.

Harris Garcelon, Arrowhead Springs, Calif.; University of Southern California College of Medicine, Los Angeles, 1904; member of the California Medical Association; aged 55; died, August 1, of cerebral hemorrhage.

John Lunsford Tracy, Sylvester, Ga.; University of Georgia Medical Department, Augusta, 1899; member of the Medical Association of Georgia; aged 61; died, July 19, of carcinoma of the prostate.

Charles William Kirsch, Hollis, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1930; aged 28; died, August 22, in the Van Wyck Hospital, Jamaica, of acute appendicitis.

Charles Heald Bennett, Sodus, N. Y.; Albany (N. Y.) Medical College, 1897; member of the Medical Society of the State of New York; aged 62; died, July 22, of diabetes mellitus and myocarditis.

Freeman Clark Wight, Millis, Mass.; Tufts College Medical School, Boston, 1921; member of the Massachusetts Medical Society; aged 63; died suddenly, August 4, in Boston, of coronary thrombosis.

John P. Wells, Paintsville, Ky.; University of Louisville Medical Department, 1909; member of the Kentucky State Medical Association; aged 55; died suddenly, August 19, of heart disease.

Mercedes Annette Roberts, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1904; aged 69; died, August 31, in the Woman's Hospital, of intestinal obstruction.

Wheaton Fregeau, New York; University of California Medical School, San Francisco, 1931; aged 29; on the staff of the Willard Parker Hospital, where he was found dead, August 19.

John Ellery Lardner Pollard, Hantsport, N. S., Canada; L.R.C.P., Edinburgh, Scotland, L.R.C.S., Edinburgh, L.R.F.P.S., Glasgow, 1894; aged 72; died, June 20, of heart disease and influenza.

Simon S. Brumbaugh, Philadelphia; Missouri Medical College, St. Louis, 1878; member of the Medical Society of the State of Pennsylvania; aged 83; died, August 13, of heart disease.

Jasper Clayton Holland, Grove, Okla.; Tennessee Medical College, Knoxville, 1893; aged 68; died, June 29, of burns received when he mistook gasoline for kerosene while building a fire.

Joseph Stuart Hume ✠ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1912; served during the World War; aged 45; died, July 29, of heart disease.

John Childs Christopher, Choctaw, Ala.; Louisville (Ky.) Medical College, 1894; member of the Medical Association of the State of Alabama; aged 70; died, August 10, in Lavaca.

Silas Bish Frankhauser ✠ Hillsdale, Mich.; Rush Medical College, Chicago, 1894; formerly mayor of Hillsdale; on the staff of the Hillsdale Hospital; aged 66; died, September 2.

Robert Andrew Kitto, Racine, Wis.; Rush Medical College, Chicago, 1885; aged 72; died, July 25, in the Health Resort, Oconomowoc, of arteriosclerosis and myocarditis.

Dellizon Arthur Foote, Omaha; Chicago Homeopathic Medical College, 1887; fellow of the American College of Surgeons; aged 75; died, August 25, of coronary occlusion.

Henry Andrew Brandebury ✠ Huntington, W. Va.; Miami Medical College, Cincinnati, 1891; formerly mayor of Huntington; aged 78; died, August 18, of coronary occlusion.

Ralph Morton Bolman ✠ Fort Wayne, Ind.; Fort Wayne College of Medicine, 1905; on the staff of St. Joseph Hospital; aged 57; died, August 19, of coronary occlusion.

Edward Blais Woodward, Yardville, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; aged 64; died, August 9, of cirrhosis of the liver.

Benjamin H. Guilbeau, Sunset, La.; Tulane University of Louisiana Medical Department, New Orleans, 1885; aged 75; died, August 4, of debility following influenza.

Joseph Boone Holmes, Hulbert, Ark.; Memphis (Tenn.) Hospital Medical College, 1900; aged 63; died, July 29, of cerebral hemorrhage and arteriosclerosis.

John Preston Huff, Flemingsburg, Ky.; Eclectic Medical Institute, Cincinnati, 1885; Civil War veteran; formerly state senator; aged 88; died, August 18.

Philip Hecht, Brooklyn; Long Island College Hospital, Brooklyn, 1931; aged 27; died, August 29, in the Beth-El Hospital, of pneumococcic meningitis.

Matthew Charles Wessel, Trenton, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1923; aged 37; died, September 7, of septicemia.

David Carson Davis ✠ Higginsville, Mo.; University of Cincinnati College of Medicine, 1921; aged 39; died, June 26, of a self-inflicted bullet wound.

Raymond John Cluen, San Leandro, Calif.; Drake University Medical Department, Des Moines, Iowa, 1901; aged 55; died, August 7, in Oakland.

Norris F. Conner, Red Key, Ind.; Eclectic Medical Institute, Cincinnati, 1879; aged 76; died, August 20, of cardiovascular renal disease.

Rupert Albert Schrankel ✠ Buffalo; Cornell University Medical College, New York, 1922; aged 38; died, September 5, of cyanide poisoning.

Thomas Bernard Patterson, Prescott, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1923; aged 43; died, August 5.

Carl Overy Apps, Mount Pleasant, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1923; aged 40; died, July 31.

David Kirk White, Shaker Heights, Ohio; Western Reserve University Medical Department, Cleveland, 1886; aged 69; died, July 15.

William Patrick Mackasey, Halifax, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1914; aged 54; died recently.

Harry Macdonald Parnell, St. Catharines, Ont., Canada; University of Toronto Faculty of Medicine, 1923; aged 35; died, August 9.

Melvin Gray, Mountain View, Okla.; Eclectic Medical University, Kansas City, Mo., 1900; aged 68; died, July 11, of a brain tumor.

Thomas H. Forster, Amelia, Ohio; Medical College of Ohio, Cincinnati, 1897; Civil War veteran; aged 92; died, August 11.

Donald Erskine Baxter ✠ Glendale, Calif.; University of Louisville (Ky.) School of Medicine, 1909; aged 52; died, July 30.

Willard Gillette, Roseboom, N. Y.; Albany (N. Y.) Medical College, 1882; aged 79; died, August 12, of chronic myocarditis.

Alexander C. Foster, London, Ky.; Hospital College of Medicine, Louisville, 1897; aged 63; died, August 12, of carcinoma.

Georgianna Warren Harris, Seattle; Hahnemann Medical College and Hospital, Chicago, 1890; aged 80; died, August 15.

William Wallace Bennett ✠ Blackstone, Va.; University College of Medicine, Richmond, 1899; aged 66; died, August 3.

Joseph Martin Hitch, Laurel, Del.; Baltimore University School of Medicine, 1897; aged 64; died, September 2.

Andrew K. Worthington, Denver; St. Louis Medical College, 1883; aged 75; died, July 27.

Correspondence

CEVITAMIC ACID AND CAPILLARY FRAGILITY

To the Editor:—In a communication, in THE JOURNAL, June 29, page 2384, Dr. Gilbert Dalldorf concedes to Dr. Irving Sherwood Wright the priority of claim of having first reported on the effect of cevitamic acid on capillary fragility. I think there is a certain amount of danger in specializing claims of that sort. Readers not acquainted with the literature might be led to believe that the idea was altogether new. This is not the case. Alfred F. Hess stated in his monograph on scurvy (Scurvy Past and Present, Philadelphia, J. B. Lippincott Company, 1920, p. 212) that he had obtained normal capillary fragility in scorbutic children when antiscorbutics (now known to contain cevitamic acid) were given. The work of Göthlin (1931) has later added new interest to the subject. Furthermore, the claim is not quite correct. In 1933 I (Treatment of Scurvy in Man with Intravenous Injection of Ascorbic Acid, *Lancet* **2**:589 [Sept. 9] 1933) gave the full details concerning a patient suffering from manifest scurvy who was cured by intravenous injections of ascorbic (cevitamic) acid. This patient had an increased capillary fragility that became normal in the course of treatment.

POUL SCHULTZER, M.D., Copenhagen.

IN DEFENSE OF THE FASCIA LATA AND THE ILIOTIBIAL BAND: A COMMENT ON BACK STRAIN AND SCIATICA

To the Editor:—Occasionally in the history of surgery, and in the development of the surgeon's armamentarium, there has arisen an apparent necessity of defending certain tissues in the human body, against hasty and unwarranted surgical attacks. Rarely has it been necessary to defend the deep fascia of the body. Recently there appeared in THE JOURNAL (May 4, p. 1580) an article by Dr. Ober entitled "Back Strain and Sciatica," which prompts this defense of the fascia lata and the iliotibial band.

The dual purpose of this communication is, first, to correct some misconceptions of anatomy expressed in Dr. Ober's paper and, secondly, to prevent an epidemic of dangerous operations on this structure.

Under pathology, he has written: "It has been observed in many patients with low back disturbances that the iliotibial band is extremely tight and prominent when the patient is lying on his back, with the knees together. . . ." It is enough to point out that in the adducted position, with the knees together, the fascia lata and the iliotibial band are normally taut. This is a constant finding, and, if they are not tight, one considers a diagnosis either of fracture of the hip with displacement or of dislocation of the hip.

In the same paragraph, some attention is given to the position of the iliotibial band in relation to the great trochanter. In reality, the relationship of the band to the trochanter at any one moment depends on whether the lower extremity is in internal rotation, midposition or external rotation, and whether the body is flexed or extended at the hips. It is entirely obvious that the great trochanter moves freely anteriorly and posteriorly under the iliotibial band with each movement of external and internal rotation, and that, when the lower extremities are fixed, the iliotibial band moves anteriorly and posteriorly over the trochanter with each movement of flexion and extension of the pelvis on the femoral heads.

The inconsistency of the author at this point is a bit startling. Concerning the iliotibial band, he has written (p. 1580); "This snapping sensation is due to the riding of the band back and forth over the trochanter." It is evident that movement of the trochanter beneath the fascia lata, or movement of the fascia lata over the trochanter, is here recognized. He proceeds to state that: "When both bands are tight and in front of the trochanter, the lumbar spine is held in lordosis, in both the standing and recumbent positions. If contracture is posterior to the trochanter, the spine is held in a lumbar kyphosis." Between the two quotations, the author seems to have withdrawn his recognition of movement between the iliotibial band and the trochanter.

In point 4, under examination, he outlines his procedure in obtaining "the most important diagnostic sign of the contracture." A moment's consideration reveals the importance of this diagnostic sign and the manner in which Dr. Ober's entire thesis with the suggested operative procedure depends on its validity. If it is a true sign, it is a valuable addition to the art and science of physical diagnosis. If it is false, it is pernicious and should be exposed. In checking the soundness and truth of any clinical sign, its application to normal individuals is a rapid and revealing method. If the sign is present in normal persons in a high enough percentage to remove its occurrence from the realm of coincidence, one feels that the sign is worthless or of questionable value.

Dr. Ober's sign for contracture of the iliotibial band may be epitomized by stating that a lower extremity is placed in the position of full extension or hyperextension, wide abduction and internal rotation, with right angle flexion of the knee, and with the patient on his side. Internal rotation is obtained by lightly holding the patient's ankle, while the weight of the extremity tends to drop the knee down toward the table, thereby yielding rotation inward. The degree of internal rotation possible in full abduction is very slight or nil, and in this test full internal rotation is probably obtained.

Time has not permitted the study of a large series of cases, but I have found this sign positive in four of seventeen normal individuals, in whom the extremity remained locked in abduction when the examiner's hand was entirely removed from contact with the extremity. In another ten persons it was found that a very light pressure on the ankle, holding it back in hyperextension, caused the extremity to remain in abduction. In the remaining three patients the sign was negative. When performing the test, one must see that full extension is maintained. While the maneuver cannot be recommended as a parlor trick, it nevertheless creates some amusement on the part of the onlookers, and no little amazement on the part of the subject.

A possible explanation of the abduction-locked extremity may be found in the following facts: Abduction loosens the iliotibial band, just as adduction tightens it. Flexion of the knee also loosens it somewhat and carries the band's insertion posteriorly. Both internal rotation and full extension of the extremity carry the great trochanter anteriorly, in relation to the iliotibial band. As the extremity is released to go from abduction toward adduction, with the knee flexed to a right angle, and the extremity held in internal rotation, the band becomes taut posterior to the trochanter and is caught in that position. This brings one to the interesting observation that, with the abducted extremity internally rotated, if the ankle is held higher from the examining table than the knee is held, the band actually becomes an internal rotator of the lower extremity, when the knee is flexed at a right angle. That is to say, both the trochanter and the knee joint are anterior to the origin and insertion of the iliotibial band, and the tension produced in it by dropping the extremity downward from abduction develops a force in the direction of internal rotation. It so happens that the powerful external rotator of the thigh, the gluteus maximus, is relaxed in the position of full extension, as set forth in Dr. Ober's sign. In the foregoing maneuver the thigh has been placed in full internal rotation to begin with, and therefore the extremity is locked in abduction.

Ordinarily, when a contracture is spoken of, the long continued contraction of the muscles whose tendons are involved is taken for granted. White fibrous tissue, such as the fascia lata and the iliotibial band, has no power of contraction in itself. Approximately one half of the gluteus maximus muscle inserts on the fascia lata, and it is the posterior tensor of the fascia. It probably controls the fascia lata to a greater degree than does the smaller tensor fasciae latae muscle.

It is a known fact that in certain cases of low back strain and sciatica the gluteus maximus is under tension; i. e., the patient has difficulty in relaxing it. In cases of long standing sciatica, one may also see an atrophy of the gluteus maximus as well as of the muscles of the thigh. A transverse section of the fascia in such a patient will further handicap an already weakened extremity.

The danger of such an operative procedure is admirably set forth by Allis in his Gross Prize Essay of 1896 (An Inquiry into the Difficulties Encountered in the Reduction of Dislocation of the Hip), page 22, where he relates the following:

> In December, 1884, I was seized with a pain in the outer aspect of my right thigh which soon developed into an abscess beneath the fascia lata. In order to facilitate drainage, I requested Dr. D. Hayes Agnew to cut the fibers of the fascia transversely. This he did; and, on my recovery after nine weeks of recumbency, I was not a little surprised at the insecurity of the head of the femur, which became partially dislocated with each step and returned with a decided jar and an audible sound. This could not have been due to anything but the division of the fascia lata and its consequent lengthening and changed relations, which withdrew the normal pressure from the trochanter; thus a joint that had never exhibited the slightest disease or tendency to insecurity before the division of the fascia, became subsequently, upon my first use of it, so unstable that I feared for a time that a synovitis would ensue from the constant concussions occasioned by even the gentlest use. By degrees the tensor muscles shortened and reestablished their former control; but the security has never fully returned.

In the same work, which should have a much wider reading public than its limited edition has permitted, Allis lists the different functions of the fascia lata. A few of these are, first, as a tensor of the deep muscles of the thigh; second, as a check against the tendency to dislocation of the hip; third, as a support for the body at rest, while the individual shifts his weight from one extremity to the other with alternate adduction from side to side, as the pelvis drops down toward the weight bearing extremity; and, fourth, its hammock function. It has been my pleasure to verify the work of Allis repeatedly and to record my observations in papers on Perthes' disease, on posture in relation to flat feet, and on the treatment of fractures of the hip by adduction.

Dr. Ober's suggested operation represents a tenotomy of the tensor fasciae latae muscle and about one half of the gluteus maximus muscle at one stroke. He observed a separation of the fascia from its insertion when cut, varying from three-fourths inch to 1½ inches. The amount of this separation depends, of course, on whether the extremity is in adduction or abduction when the fascia is cut.

Regarding the gluteus maximus, the operation is a sacrifice of one half the power of that side, to extend the trunk on the hip from the flexed position, with a consequent strengthening of its chief antagonist, the iliopsoas. If both sides are cut, an exaggeration of the lumbar lordosis should be anticipated, owing to the increased influence of the iliopsoas muscles. The operation is also a sacrifice of about one half the power of external rotation.

Six or eight weeks in a plaster cast, with the extremity in hyperextension and abduction, would seem a more reasonable price to pay for relaxation of the gluteus maximus muscle. I shall be very much interested in Dr. Ober's end-result study of these patients.

L. E. SNODGRASS, M.D., Philadelphia.

[This letter was submitted to Dr. Ober, who replies:]

To the Editor:—In the first paragraph, Dr. Snodgrass suggests that the article "Back Strain and Sciatica" is a "hasty and unwarranted attack." My work was not hasty nor do I think in the light of what has transpired since, an illegal attack on the iliotibial band and fascia lata. The fascia lata has been used for many years as suture material in repair of anatomic difficulties; large sheets of fascia have been employed to repair tissue elsewhere; it has a widespread use in arthroplasty of joints. Dr. Robert Soutter published the description of an operation many years ago for the relief of hip joint contracture which included division of the iliotibial band and many of his colleagues all over the country, including myself, have performed this operation without any untoward results of function of the hip joint. The same operation has been performed also for abduction contracture of the hip many times in the last two years.

My operation is not dangerous. In the last fourteen months my associates and I have performed this operation on forty-two patients, both hips having been operated on in several instances. Dr. Benjamin Farrell of New York has performed nineteen, Clay Murray has done eight, Maxwell Harbin of Cleveland several, and there are many other instances in which men have done the operation with satisfactory results. Dr. Snodgrass talks about vagueness of diagnosis and etiology. Everybody who has to deal with low back conditions knows that diagnosis is not always certain and I feel that I have added one more approach that will help solve the situation. It is distinctly stated in the original article that the abduction sign is important when x-ray evidence of low back condition is lacking. That does not mean that I disregard all other clinical evidence of lame back conditions.

The iliotibial band is extremely tight and prominent when the patient is lying on his back with his knees together. Dr. Snodgress quotes "It is enough to point out that in the adducted position, with the knees together, the fascia lata and the iliotibial band are normally taut." The answer to this is that the thighs cannot be adducted with the knees together because this is considered the neutral anatomic position and there should be from 15 to 30 degrees more of passive adduction from this position without moving the pelvis.

The relation of the iliotibial band to the greater trochanter is always the same whether the patient is lying on his back or is standing. It changes with flexion and rotation of the hips, but the two ends of the band are always in the same position, since they are firmly attached above to bone and below to intramuscular septum and along the lateral aspect of the femur and continued down to the head of the tibia and fibula.

I do not understand the point about the "inconsistency." The snapping sensation of which I speak refers to the condition known as "snapping hip," and other authors have pointed out that "snapping hip" is due to an increased thickening of the posterior part of the iliotibial band. For years many have treated and cured snapping hips by dividing the iliotibial band and have had no bad results.

Dr. Snodgrass further quotes from my original article. "When both bands are tight . . ." and then hints that I have left out something of importance. That is not so, because I am speaking of a patient who is either standing or lying with the legs in the neutral position.

With regard to the sign in normal individuals, if there is a marked abduction contracture the patient is not a normal individual. He may have a lumbar lordosis, an exaggerated flat back, short posterior leg muscles, a lame back or, what is almost as important, a disturbance of posture.

Dr. Snodgrass has seen fit to add internal rotation to my method of examination: It is distinctly stated in my article that the thigh is abducted and extended in line with the body; nothing is said about internal rotation, external rotation or any other positions except abduction and extension. The object of

having the knee flexed and of holding the ankle as described is to help the leg in neutral position as regards rotation.

I do not understand the facetious reference to "the parlor trick, amusement of the onlookers and the amazement of the subject." In all my experience of examining patients, this trilogy of levity has never been observed and I do not think that making this test is any more of a parlor trick than testing knee jerks, straight leg raising or a hand grasp. Dr. Snodgrass refers to his examination: He found the sign positive in four of seventeen normal individuals in whom the extremity remained locked in abduction, three in whom the sign was negative, and ten in whom the sign was faintly positive. It seems to me that I ought to be given an opportunity of seeing these so-called normal individuals. My colleagues throughout the country tell me that they do not find many cases in which the abduction sign is positive.

Flexion of the knee does not loosen the iliotibial band when it is tight. As a matter of fact, if one tries to flex the knee beyond a right angle the abduction position increases and again I would reiterate that the extremity is never held in internal rotation, as Dr. Snodgrass claims.

More than one half of the gluteus maximus muscle is inserted into the fascia lata, but it is doubtful whether this muscle has more control of the fascia than the tensor: That is, any more than the plantar flexors of the foot have a greater control than the dorsal flexors, although the pull of the plantar flexors is in ratio ten to one.

Everybody who treats lame backs knows that there is atrophy of the gluteus maximus muscle and often of the thigh muscles. Dr. Snodgrass says "A transverse section of the fascia in such a patient will further handicap an already weakened extremity." How is Dr. Snodgrass so sure that this is true since it is evident that he has not performed the operation? In my experience most of the patients with unilateral involvement are able to resume light work in four days and those with bilateral involvement in two weeks without difficulty, provided the sciatica disappears.

With regard to the Allis Gross Prize Essay of 1896, is it not possible that Dr. Agnew cut the fascia in such a way that the healing resulted in a snapping hip instead of a hip joint lesion?

A patient with a strong iliotibial band contracted in the abducted position but without any power in the abductor muscles in walking always lists toward the paralyzed side and does not walk with alternating adduction from side to side as Dr. Snodgrass claims.

The statement of Dr. Snodgrass that one half of the gluteus maximus muscle is divided at one stroke is a distinct misstatement of the fact. The operation is done very carefully. The fascia around the tensor fascia lata is divided and then the incision is carried posteriorly and slightly downward, ending just above and slightly posterior to the trochanter; but no part of the gluteus maximus muscle is divided, as Dr. Snodgrass states.

The operation does not sacrifice one half of the power of the gluteus maximus muscle. This is the crux of the situation. As paragraph 15 reads, one would think that the function of the gluteus maximus muscle had been ruined forever. If in my operation I did something to the gluteus maximus muscle this might possibly be true; but, since the insertion of the gluteus maximus muscle into the fascia lata and the femur is neither cut nor disturbed, no power is sacrificed. In cases in which operation has been performed on both sides the lumbar lordosis is not exaggerated, as Dr. Snodgrass states, but is decreased. Hence there is no sacrifice of external rotation.

With reference to a plaster "cast," orthopedic surgeons and others all over the country have used plaster casts for years in the treatment of sciatica; also bed, braces, traction, drugs and fusion operations, often without satisfactory results. Occasionally a plaster spica will give relief, but it does result in a great amount of atrophy of the thigh muscles and patients always object to spicas. I do not see that the application of the "cast" is a more reasonable procedure to pay for the relief of sciatica than the division of the iliotibial band.

FRANK R. OBER, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

MANOMETRIC READINGS IN PNEUMOTHORAX

To the Editor:—Will you please send me reading material on the interpretation of manometric readings in pneumothorax treatment, the relation of atmospheric pressure to pneumothorax readings, and any other material you may have on the mechanism of pneumothorax therapy.

ANNE B. CREMER, M.D., San Haven, N. D.

ANSWER.—An understanding of the development of the intrathoracic negative pressure, on which one depends for the manometer readings in artificial pneumothorax work, is extremely important. Before birth the lungs are solid and fill that part of the thoracic cavity not occupied by other structures. When respiration begins, the conditions inside the thorax are greatly changed. Outside air rushes through the trachea and bronchi into the lungs as the diaphragm descends, and an intrapulmonic pressure is established. At the end of expiration in a new-born child all the air has been expelled from the lungs except that entrapped by the collapse of the bronchioles (minimal air). As the thorax enlarges relatively faster than the lungs, the intrapulmonic pressure forces the lungs to expand to fill all available space. This, through the elasticity of the lungs, produces a negative pressure. Since the intrapulmonic pressure usually is approximately the same as atmospheric pressure, it is obvious that the intrathoracic pressure is equal to one atmosphere less the resistance offered to the intrapulmonic pressure by the elastic tissue of the lungs. Therefore the intrathoracic pressure is less than the atmospheric pressure and is spoken of as a negative pressure.

Thus, in the normal pleural cavity the pressure is negative. When a needle attached to a small syringe containing procaine hydrochloride is inserted into the pleural cavity, the negative pressure actually draws the procaine from the syringe, and one sees the plunger descend, provided it does not fit too tightly. With the needle tip still in the pleural cavity, the syringe is replaced by a rubber tubing connected to a manometer. Then the negative pressure tends to draw the fluid of the manometer upward on the side to which the tube is connected. With ordinary breathing, definite oscillations will be observed in the manometer fluid; that is, when the patient inhales, the intrathoracic negative pressure is definitely increased and the fluid is drawn higher in the manometer. When the patient exhales, there is a decrease in the negative intrathoracic pressure and the manometer fluid descends. If a water manometer is used, one should not consider the tip of the needle to be in the pleural cavity unless the manometer records a negative pressure of 4 or more centimeters and the fluid in the manometer throughout its oscillations remains well on the negative side. If by accident the tip of the needle penetrates the lung, oscillations may be observed and on deep inspiration a considerable elevation of fluid on the negative side of the manometer is observed. However, on expiration one usually observes an equally great positive pressure. The proper manometer readings are of great significance, since if air is introduced into the lung it may find its way into blood vessels and result in gas embolus, which is a distressing situation and may cause the death of the patient.

When one is certain from the negative manometer readings that the tip of the needle is in the pleural cavity, one may safely introduce from 200 to 300 cc. of air in most cases; but, during the introduction of this amount, manometer readings should be taken frequently to make sure that the needle has not moved so as to penetrate the lung or to have slipped out of the pleural cavity. Moreover, the pleural cavity may be partially obliterated by adhesions and 200 or 300 cc. of air would result in a positive pressure, which not only would result in considerable pain to the patient during the next twenty-four hours but might cause tearing of adhesions at their attachment to the visceral pleura, thus opening blood vessels through which air might

enter to cause gas embolus or tearing of the visceral pleura sufficient to result in a bronchopleural fistula, through which pyogenic micro-organisms in the bronchial tree might reach the pleural cavity and cause empyema. Therefore, if during the course of administration of air the negative pressure disappears and the oscillations are sufficiently great to indicate that the tip of the needle is still in the pleural cavity, one should discontinue before the usually 200 to 300 cc. of air has been introduced.

On subsequent treatments or refills the manometer readings are also important. If they are well on the negative side, it is safe to introduce air. On the other hand, if they are approximately that of atmospheric pressure or are on the positive side, one may suspect that a bronchopleural fistula has developed or that fluid has accumulated in the pleural cavity. If no adhesions are present, one almost never needs to bring about a positive pressure in the pleural cavity in order to produce good lung collapse. When the intrathoracic pressure is reduced to that of atmospheric pressure, through the introduction of air, there is no longer any pull on the lung and because of the preponderance of elastic tissue fibers, which now contract, the lung collapses. However, if consolidation, dense fibrous tissue or thick-walled cavities are present, one may need to introduce enough air from time to time to bring about a positive intrathoracic pressure in order to collapse the diseased area adequately.

The technic of administering artificial pneumothorax, with the description of manometer readings, is the same whether one is collapsing the lung in the treatment of pneumonia, tuberculosis and other disease conditions or whether one is introducing air as a diagnostic procedure. The technic has recently been described by Moorman (*Internat. Clin.* **4**:119 [series 44], 1934) and Myers (Artificial Pneumothorax, THE JOURNAL, Oct. 27, 1934, p. 1299).

"VERMIPHOBIA"

To the Editor:—A woman, aged 35, has for several years complained of indefinite gastro-intestinal discomfort, a moderate nausea with occasional real vomiting attacks. There was also a definite feeling of anxiousness with this picture of stomach discomfort. Repeated and supposedly thorough examinations by three of our leading internists gave no relief, one making a diagnosis of anemia (it read 80) and prescribing iron, another a diagnosis of avitaminosis and prescribing yeast, all this to no profit. Quite by accident the patient discovered about two months ago that she had worms, and when they were recovered they were easily identified as Oxyuris vermicularis. Both the male and female forms are present. I set about curing the girl (she is my wife) but I cannot get to first base. The usual complaint of anal itching is not present, but about once every two days she feels a sharp, stinging sensation as though the female had pinched the mucous membrane with her pincers. This sharp discomfort is at the anal end of the gastro-intestinal tract. She takes an immediate enema of strong salt water and reports that careful search reveals one or more female forms, some as long as a centimeter or more. This goes on from day to day, to the extreme embarrassment of the victim. I have given 15 Gm. of bismuth subcarbonate by mouth once a day for three successive days, resulting in a rather severe irritation of the bowel lining and no relief. (This prescription is advised by Henry B. Ward in Abt's Pediatrics.) Of course, quassia infusion and 10 per cent sodium chloride solution have been repeatedly used as rectal douches. My understanding is that the male and female forms may abide in the entire gastro-intestinal tract, particularly the appendix. Could the patient's previously mentioned discomfort and unusual celiac unrest have been caused by a long standing infestation with Oxyuris? Can you suggest a method for relieving this trouble? If auto-infection occurs as related in the books, why doesn't her family immediately acquire this affliction? The patient's appendix was removed five years ago. Also the most strict regimen of sanitary precautions is practiced by the patient. Her general health is good but I am sure her knowledge of her ailment is, to a moderate degree, unsteadying her emotional balance. Please omit name.

M.D., West Virginia.

ANSWER.—In the case under discussion, one should beware of the development of what might be called "vermiphobia." One should, of course, apply the accepted remedies and hygiene found effective in this condition in a systematic and thoroughgoing manner, until the discomfort is no longer encountered. The patient might take a salt water enema whenever she feels the "stinging sensation," though she might dispense with the "prolonged and careful search for the worms." Indeed, the less attention she pays to the matter of worms, which many persons carry without knowing about them or their doing any harm, the better for her. It is probable that the gastro-intestinal discomfort is not due to the worms but to some form of colon stasis, the nature of which had better be investigated by a gastro-intestinal x-ray series. There might, for instance, be cecal stasis due to adhesions, which could be corrected by courses of saline laxatives. There might be colon spasm, which might be amenable to liquid petrolatum. If there is absolutely no intestinal abnormality, and even if there is, one should contemplate the psychoneurotic background, which may require treatment by means of one or more of the recognized modalities of psychotherapy: suggestion, persuasion, psychoanalysis and mental hygiene.

SCOLIOSIS AND FLAT FEET IN A CHILD

To the Editor:—A boy, aged 8 years, had measles complicated by bilateral otitis media, lobar pneumonia of the left lower lobe and a seropurulent effusion of the same side, which was absorbed after repeated tappings. He was confined to bed for about two months but has made a good recovery and has now been out of bed for about four weeks. Since he started walking he has complained of pain in the feet, particularly the left foot and mainly at the site of the transverse arches and medial side of the plantar surface of the foot; there is no foot deformity but he walks with a limp. Inspection shows that the left side of the chest is smaller than the right and has diminished expansion. The left shoulder is lower than the right, the spine showing a curvature to the left. I feel that this posture plays a part in causing the pain in the feet and am mainly interested in knowing what measures should be used to correct the chest deformity and prevent a scoliosis in the future, whether there is a mechanical appliance that may be used to correct this posture, and what exercises would be beneficial. Would arch supports or some appliance in the shoe be beneficial? If published, please omit name and address.

M.D., Texas.

ANSWER.—The child might have had scoliosis before contracting measles. The factors in the case may be divided into the toxic and the mechanical, or static, factors. Under the mechanical factors should be mentioned pelvic disbalance, flat-foot, foot strain, metatarsal depression and plantar fascitis.

The toxic factors include measles, otitis media, pneumonia and empyema. There may be a toxic synovitis or arthritis present. There is nothing in the query to indicate that a "rheumatic heart" has been eliminated from the picture.

One must determine whether the scoliosis is functional (postural) or organic (structural). One must determine whether there is torsion or rotation of the spine. One should have roentgenograms taken in at least two projections in order to make the diagnosis and prescribe proper treatment. An orthopedic surgeon should be consulted and permitted to treat the patient.

A comprehensive outline of the treatment would include rest in bed on a rigid mattress, Bradford or Whitman frame, special exercises, plaster-of-paris casts and braces. The types of casts used are the Risser bent jacket, the Galeazzi cast or the Brewster plaster jacket. The types of braces most commonly used are the Taylor spine brace, the leather jacket, and the most recent the Chambers brace (described in the *Journal of Bone and Joint Surgery* **17**:219 [Jan.] 1935). Operation is indicated in some cases but it would not appear necessary in this case.

Concerning the feet, treatment would include rest in bed and local applications and, in due time, proper shoes, resilient arch supports, special exercises, massage and contrast sprays.

BACILLUS PROTEUS IN CYSTITIS

To the Editor:—How frequently is Bacillus proteus-vulgaris found as the etiologic organism in cystitis and pyelonephritis? I have recovered this organism on six different examinations, including one cystoscopic examination, while using all sterile precautions known to prevent contamination. I would also appreciate knowing whether there are any rational therapeutic measures for its eradication.

W. F. KELLER, M.D., Oklahoma City.

ANSWER.—Bacillus proteus-vulgaris is not a common invader of the urinary tract. Justina H. Hill (Young's Practice of Urology, Philadelphia, W. B. Saunders Company, 1926) found seven instances of Bacillus proteus-vulgaris infection in 356 cultures of urine from infected bladders. J. R. Caulk (The Practice of Surgery, edited by Dean Lewis, volume 8, chapter 6) states that Bacillus proteus is occasionally the cause of chronic infections of the kidney. William J. Baker (The Bacteriologic Study of Catheterized Kidney and Bladder Urine, *Tr. Chicago Urol. Soc.*, 1931) reports that this organism was found in three specimens of 136 infected bladder urines and in one specimen of fifty infected kidney urines. The foregoing facts seem contrary to the usual bacteriologic teaching that Proteus vulgaris is next in importance to Bacillus coli-communis in the etiology of cystitis and pyelonephritis.

The same therapeutic measures should be instituted as are used to eradicate any bacillus of the colon group. There should be a daily copious intake of water. The best urinary antiseptic is some form of methenamine along with an efficient acidifying agent; it may be necessary to prescribe a strict ketogenic diet in order to maintain the proper hydrogen ion concentration of the urine. After ten days to two weeks, medication can be changed to strong alkalizing agents. The various dye urinary antiseptics are less effective in these infections. Bladder irrigations with warm 1:10,000 potassium permanganate solution

are useful. If irrigations are poorly tolerated, instillations of 5 per cent mild silver protein are soothing and effective. Bowel stasis should be corrected. Concomitant infection of the prostate gland and seminal vesicles should receive the proper treatment. Endocervicitis has been proved to be definitely related to bladder infections; discharging cervices should be treated and cured. Other foci of infection in the teeth, tonsils or gallbladder should be investigated and treated. Kidney lavage with 1 per cent silver nitrate solution or 1 per cent mercurochrome solution is fairly efficacious in bacillary kidney infections. Autogenous vaccines may be of some aid. A change in residence to a milder and warmer climate is indicated in a few cases. In all of these cases the physician must prove to himself by proper urologic study that there is no obstruction or stasis anywhere along the urinary tract.

CHRONIC CARBON MONOXIDE POISONING

To the Editor:—In Queries and Minor Notes in THE JOURNAL, March 23, page 1029, appeared an answer to a question on chronic carbon monoxide poisoning that interested me. The statement is made that "it is only after an exposure of many hours to sublethal concentration of carbon monoxide that injuries to the nervous system and mentality, and occasionally to other organs and functions, develop and persist throughout the remainder of life." I think this statement can well be challenged, and although it is true that Dr. Alice Hamilton in "Industrial Toxicology" does arrive at those conclusions, it is also true that there are many other workers who will sharply disagree. In fact, there has been considerable research work done and clinical observations made in which investigators have made the opposite statement, that small concentrations of carbon monoxide inhaled over a long period of time do not cause any permanent tissue damage. Particularly is this true when there is an opportunity for partial if not complete desaturation to occur in between the times of absorption. I would particularly refer to the work of the United States Bureau of Mines, which has been ably carried out under the direction of R. R. Sayre. I would also refer to a monograph entitled "Carbon Monoxide Poisoning," by H. M. F. Behneman (*Northwest. Med.* **33**: 301 [Sept.] 1934); also, "Present Day Hazard of Chronic Carbon Monoxide Poisoning," by Paul Michael (*California & West. Med.* **40**: 19 [Jan.] 1934). I should be interested in hearing from you where I might obtain more information concerning the support of the previous statement of the effects of chronic carbon monoxide poisoning, other than the reference to Dr. Hamilton's work. Should this communication receive mention in Queries and Minor Notes, please omit name.

M.D., Nevada.

ANSWER.—It is not clear what our correspondent is challenging. The only conditions that can properly be termed "chronic carbon monoxide poisoning" are those of the type to which workers in badly ventilated garages and repair shops are exposed for a considerable time daily over long periods. The effects are a general deterioration of health without specific injury to any particular organ. Change of occupation usually leads to complete recovery of health. The consequences of a severe asphyxia under carbon monoxide lasting for many hours are injuries, especially to the nervous system, that are due to degenerations of a necrotic nature initiated during the temporary deprivation of oxygen while the carbon monoxide is in the blood. In such cases "chronic carbon monoxide poisoning" in the sense of retention of the gas for more than a few hours is not involved. Besides the references previously quoted we suggest the reading of "Respiration" by J. S. Haldane and J. G. Priestley, Oxford University Press, 1935.

NONALLERGIC COSMETICS

To the Editor:—One often hears of nonallergic cosmetics. I know that such substances as orris root and starch are two ingredients that are sometimes incorporated in such cosmetic preparations as powder or powder base. Can one really say, and be theoretically correct in doing so, that a cosmetic preparation is positively nonallergic? Is it not true that of the various ingredients in such preparations there is bound to be some one who will show abnormal reactions to one or another of these ingredients in view of the fact that vast numbers of people use these often? I should appreciate it if you would outline in your columns the names of the substances or groups of substances that are known to give rise to allergic manifestations when they are incorporated in cosmetic preparations that are applied to the skin. Please refer me to some standard works that will describe more fully the information requested.

M.D., New York.

ANSWER.—It is true that in the strict sense of the word there is probably no cosmetic that is completely nonallergic. As time goes on, new substances are being found that cause symptoms in certain individuals. But it may safely be said that the various nonallergic cosmetics are nonallergic to an almost 100 per cent degree. The main ingredients in cosmetics that can cause trouble are orris root, rice starch, wheat starch and cornstarch. In addition, one must consider compounds of mercury and lead, quinine, eosin, oil of bergamot, paraphenylenediamine and methyl heptine carbonate. Occasionally a patient is found who has an idiosyncrasy to the coloring material.

In addition to those ingredients in the cosmetics which may be troublesome from an allergic point of view, one must consider other possible factors. The type of glue used in making the package must be thought of; the lacquer used in coloring the containers and the powder puff used in applying the face powder or rouge may cause symptoms in rare cases. It is obvious, then, that 100 per cent allergen-free cosmetics do not exist. However, the manufacturers of these products are on the alert; if allergy to some new substance is found, they attempt to provide a harmless substitute.

For further information one may consult such references as:

Encylopedia Britannica, edition 14.
Poucher, W. A.: Perfumes and Cosmetics, London, Chapman & Hall, Ltd., 1923.

For references that deal with orris root (the most important substance in cosmetics than can cause allergic symptoms) one may consult:

Coca, A. F.; Walzer, Matthew, and Thommen, A. A.: Asthma and Hay Fever, Springfield, Ill., C. C. Thomas, 1931.
Balyeat, R. M.: *J. Lab. & Clin. Med.* **13**: 516 (March) 1928.
Rackemann, F. M.: *Boston M. & S. J.* **194**: 531 (March 25) 1926.
Phillips, E. W.: *Southwestern Med.* **11**: 299 (July) 1927.
Gelfand, H. H.: *J. Allergy* **1**: 222 (March) 1930.
Balyeat, R. M.: *J. Lab. & Clin. Med.* **14**: 7 (April) 1929.
Ramirez, M. A., and Eller, J. J.: *J. Allergy* **1**: 489 (Sept.) 1930.
Rowe, A. H.: *J. Lab. & Clin. Med.* **13**: 31 (Oct.) 1927.
Eggston, A. A.: *Laryngoscope* **32**: 877 (Nov.) 1922.

CHLORINE IN SWIMMING POOL

To the Editor:—The University of Arizona here is about to build a new swimming pool, and the state bacteriologist has asked me as to the harmfulness of chlorine treated water for swimming pool use in a strength great enough to act as a disinfectant. In other words, one group of those having to do with this project are in favor of having the water treated with chlorine with an amount greater than that ordinarily used for treating drinking water, while in other quarters this method is much opposed and the bacteriologist in question has asked me particularly as to the stand taken in such matters by the American Medical Association recently; likewise the sense of the recent opinion by one of our ear, nose and throat associations. I would much appreciate your being so kind as to let me know the present status of this question of disinfecting swimming pools with chlorine. Since the number of days is few before some definite action will be taken here about this, it would be especially good of you to let me have a reply as soon as practicable.

THOMAS H. CATES, M.D., Tucson, Ariz.

ANSWER.—Chlorine, either alone or in combination with ammonia, is generally used for the disinfection of swimming pool water. The amount of residual chlorine in water is readily determined by simple tests.

Fletcher and Clark (*Am. J. Pub. Health* **23**:407 [May] 1933) have given a discussion of the control of swimming pools in which they say "The consensus of opinion of authorities seems to be that there is a potential danger of person to person transmission of pathogenic bacteria added to the pool by swimmers, and that this danger may be greatly minimized or eliminated by an efficient disinfecting agent, such as chlorine."

If the amount of chlorine is controlled to avoid excessive doses, there appears to be little or no objection to its use. The amount of residual chlorine should be maintained between 0.2 and 0.5 part per million at all times that a pool is in use. Tests should be made at least twice daily, preferably at the time of the greatest bathing load. By using chloramine, somewhat higher amounts of residual chlorine may be maintained without objection.

Fletcher and Clark believe that "with the proper p_H control and the use of chlorine and ammonia, no complaints should result from maintenance of residuals as high as 1.0 part per million."

A great deal depends on the care exercised by the pool operator, in controlling the amount and method of application of chlorine, to assure the proper dosage and even distribution of the disinfectant throughout the pool.

EMBOLUS OF CENTRAL ARTERY OF EYE

To the Editor:—I have a case in which a Caldwell-Luc operation was done on the left antrum. This was followed by emboli involving the central artery of the left eye and a complete paralysis of the third nerve of that eye. I am trying to find any cases in the medical literature presenting this complication. The librarian of the Seattle Medical Library advised me to write to you. I will appreciate any information or references you can give me.

H. R. SECOY, M.D., Everett, Wash.

ANSWER.—A short discussion pertaining to this subject is to be found in the "Kurzes Handbuch der Ophthalmologie," vol. 5, p. 698, by H. Rönne of Copenhagen. In the discussion of "Trauma to the Orbit" in the Graefe-Saemisch Handbuch, the volume on Injuries by Wagenmann, the combination of

embolism of the central artery of the retina and complete third nerve paralysis is mentioned as the sequel of hemorrhage into the orbit of traumatic origin. Galezowski also stated that, in cases of embolism of the central artery of the retina in persons not afflicted with heart disease, the arterial blockage was probably the result of hemorrhage into the sheaths of the optic nerve. In one case a sudden exophthalmos occurred during the course of a Caldwell-Luc operation. This was followed by complete external ophthalmoplegia (third, fourth and sixth nerves) and a blockage of one of the peripheral arteries of the retina. The chain of ocular complications was undoubtedly due in this instance to intra-orbital hemorrhage.

DIABETES

To the Editor:—I have a patient who has symptoms of trembling, weakness, anxiety and faintness, starting from two to three hours after meals and very much aggravated by physical or mental strain. These symptoms are invariably relieved by the ingestion of carbohydrates—in other words, presenting typical symptoms of hypoglycemia and yet presenting the following dextrose tolerance curve:

Fasting blood sugar	95.2	mg. per 100 cc. of blood
½ hr. after 100 Gm. of dextrose	168	mg. per 100 cc. of blood
1 hr. after 100 Gm. of dextrose	219	mg. per 100 cc. of blood
2 hr. after 100 Gm. of dextrose	133	mg. per 100 cc. of blood
3 hr. after 100 Gm. of dextrose	105.8	mg. per 100 cc. of blood
4 hr. after 100 Gm. of dextrose	79	mg. per 100 cc. of blood
4½ hr. after 100 Gm. of dextrose	81.6	mg. per 100 cc. of blood

The patient shows intermittently, in the afternoons, various amounts of sugar in the urine from one to two hours after meals. Is this a case of hyperinsulinism in spite of the fasting blood sugar? One fasting blood sugar reading taken a few days before the tolerance test was 77 mg. per hundred cubic centimeters of blood. Can this case be one of diabetes mellitus because of the rise of the blood sugar at the end of the first hour to 219 mg. and failure to return to the fasting level at the end of two hours, as stressed by many authorities on diabetes, and the intermittent glycosuria? Please omit name. M.D., Missouri.

ANSWER.—The patient would appear to have diabetes, because in addition to glycosuria there is a peak blood sugar of 219 mg. and the blood sugar at the end of even three hours has not quite reached the fasting level. What was the extent of the glycosuria during the dextrose tolerance test? Has the patient been living on a special diet? What is the blood sugar and what is the amount of glycosuria when he has the peculiar symptoms? Are the data different on days with symptoms than on days without symptoms? Do the attacks always come at the same time of day? Are infections and thyroid complications surely excluded? All such cases require detailed and prolonged investigation.

It is not uncommon for diabetic patients to have normal fasting blood sugar values, and this is particularly true of children.

REPLACEMENT OF RETROVERTED UTERUS

To the Editor:—In the nonoperative treatment of retroversions, what is the best way of getting a uterus in place which has turned back and slipped down past the promontory of the sacrum? I have tried by bimanual manipulation, in the office, to replace these uteri, but am absolutely unable to on account of pain to the patient and slipping of fingers on the organ. Please omit name. M.D., Vermont.

ANSWER.—Manipulation with the midfinger of the vaginal hand at the external os and the forefinger on the anterior surface of the cervix combined with high gentle deep manipulation with the abdominal hand usually suffices; the replacement is commonly effected with only modest discomfort except in cases in which the uterus is adherent.

Occasionally it is necessary to resort to combined abdominal and vaginorectal manipulation. Upward midfinger pressure through the rectum, coordinated with elevation by the abdominal hand, may be required to dislodge a fundus deeply placed in the culdesac.

Despite the fact that a skilled gynecologist can almost invariably replace the uterus unless it is fixed by adhesions, no one should hesitate to resort to anesthesia if a replacement cannot be made without causing undue discomfort to the patient.

NEOARSPHENAMINE AND PHLEBITIS

To the Editor:—Is it possible for a phlebitis of the arm to develop following the injection of a strong (0.9 Gm.) neoarsphenamine solution? IRWIN I. LUBOWE, M.D., New York.

ANSWER.—Neoarsphenamine, even in strong solutions, does not produce a phlebitis when the injection is given intravenously with the usual sterile precautions. When the injection is given in the subcutaneous tissue outside the vein, a firm, doughy, painful, perivascular infiltrate results and a condition simulating a phlebitis may develop.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: Kansas City, Mo., May. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. *Applications must be filed not later than Nov. 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, Nov. 18. Application and case reports must be filed before Oct. 15. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Oct. 10 and St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARKANSAS: *Basic Science.* Little Rock, Nov. 4. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Nov. 12. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, Nov. 12. Sec., Dr. Clarence H. Young, 207½ Main Street, Little Rock.

CALIFORNIA: Sacramento, Oct. 21-24. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Oct. 12. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical. (Regular).* Hartford, Nov. 12-13. *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, Nov. 12. Sec., Dr. Joseph H. Evans, 1488 Chapel Street, New Haven.

FLORIDA: Tampa, Nov. 11-12. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 8-9. Joint-Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 22-24. Act. Supt. of Regis., Dept. of Regis. and Edu., Mr. Clinton P. Bliss, Springfield.

IOWA: *Basic Science.* Des Moines, Oct. 8-10. Sec., Dr. Edward A. Benbrook, Iowa State College, Ames.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413 State House, Boston.

MICHIGAN: Lansing, Oct. 8. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 15-17. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore, Oct. 22-24, and Boston, Nov. 5-7. Exec. Sec., Mr. Edward S. Elwood, 225 So. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 19-20. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 4. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 15-16. Sec., Dr. Arthur W. Belting, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 14. Sec., Dr. Le Grand Ward, Sena Plaza, Santa Fe.

OREGON: *Basic Science.* Portland, Nov. 16. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

WEST VIRGINIA: Huntington, Oct. 28. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

Georgia June Report

Mr. R. C. Coleman, joint secretary, State Examining Boards, reports the written examination held by the State Board of Medical Examiners at Atlanta, June 11-12, 1935. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty-nine candidates were examined, 87 of whom passed and 2 failed. Four physicians were licensed by reciprocity. The following schools were represented:

PASSED School	Year Grad.	Per Cent
Emory University School of Medicine (1935) 81.5, 83, 83.5, 84.3, 84.4, 84.5, 84.8, 85.2, 85.2, 85.5, 85.7, 85.9, 86, 86.1, 86.1, 86.4, 86.4, 86.6, 86.8, 86.8, 86.9, 86.9, 86.9, 87, 87, 87.1, 87.2, 87.2, 87.3, 87.3, 87.3, 87.4, 87.7, 87.7, 87.7, 87.7, 87.8, 87.9, 88, 88.1, 88.4, 88.5, 88.5, 88.7, 89.4, 89.4, 90.2,	(1934)	86, 94.6,
University of Georgia School of Medicine 84.2, 85.1, 85.4, 85.5, 85.7, 85.7, 86.3, 86.5, 86.7, 86.7, 86.8, 87.3, 87.7, 87.8, 87.9, 87.9, 87.9, 88, 88, 88.1, 88.2, 88.5, 88.6, 88.6, 88.8, 88.9, 89.1, 89.2, 89.4, 90.1, 90.3, 91.5	(1935)	83.3,
Louisiana State University Medical Center	(1935)	91.4*
Tulane University of Louisiana School of Medicine	(1934)	83.4
University of Tennessee College of Medicine	(1932)	84.7
University of Virginia Department of Medicine	(1934)	88.9
McGill University Faculty of Medicine	(1932)	87.1

FAILED School	Year Grad.	Per Cent
Meharry Medical College	(1917) 72.6, (1930)	69.1

LICENSED BY RECIPROCITY School	Year Grad.	Reciprocity with
College of Physicians and Surgeons of Chicago	(1910)	Kansas
Johns Hopkins University School of Medicine	(1930)	Maryland
Medical College of Virginia	(1934)	Virginia
University of Virginia Department of Medicine	(1931)	Virginia

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Hawaii July Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held in Honolulu, July 8-11, 1935. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Five candidates were examined, 4 of whom passed and 1 failed. Two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1935)	81
Rush Medical College	(1929)	86, (1935)	78
University of Pennsylvania School of Medicine		(1932)	83

School	FAILED	Year Grad.
Jefferson Medical College of Philadelphia		(1933)

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1934)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1933)	N. B. M. Ex.

Book Notices

Failure of the Circulation. By Tinsley Randolph Harrison, M.D., Associate Professor of Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee. Cloth. Price, $4.50. Pp. 396, with 60 illustrations. Baltimore: Williams & Wilkins Company, 1935.

The author succeeds in linking present day physiology of the circulation with abnormalities of function seen in cardiac disease. He brings to his subject long experience with the clinical side as well as the experimental and presents his material in a short, concise manner. Probably his chapter on the "Mechanism of Edema Formation" is, in style and clarity, the best exposition of present knowledge of that subject. Clinically, he recognizes three general functional impairments of the circulation. First is acute circulatory failure, as in shock, collapse and coronary occlusion. Second is the hyperkinetic or overactive heart, featured by palpitation, increased pulse pressure, tachycardia and vigorous heart action. It is best seen in hyperthyroidism, anemia and the neuroses. The third situation is congestive heart failure. The first two of these groups are covered briefly. Much attention is paid to the main features of congestive heart failure. The author emphasizes the importance of cardiac enlargement, dyspnea and edema in this syndrome. He comments on the application of Starling's observations, both the "law of the heart" and his study of energy production in the heart as a function of diastolic ventricular volume. Oxygen utilization by an enlarged heart is the subject of a long theoretical discussion of much interest. The studies of dyspnea are classic examples of clinical experiments. They are recorded with detailed tables of data and easily read graphs. He uses the ventilation to vital capacity ratio as a measure of dyspnea. Dyspnea on exertion is explained as the result of shifts in this ratio which force the ratio above the subjective threshold so that the cortical sensation of difficulty in breathing results. Orthopnea similarly is resolved into these two variables, the vital capacity falling while the patient reclines. The mechanism of "evening dyspnea," the increasing difficulty experienced by these patients as the day wears on, results from a reduction in vital capacity following the activity of the daytime. Cardiac asthma is the subject of a chapter. Here the "trigger" stimuli that precipitate these paroxysms of dyspnea are outlined. Coughing, need of urination, external stimuli, dreams and heat are the commoner excitants of an attack. Cheyne-Stokes respiration follows in sequence. His observations make the theory of humoral control of respiration inadequate. The reflexes controlling respiration must play the chief part. The author uses much of his experimental data to show the completeness of the "backward failure theory" of congestive heart failure. The "forward failure" hypothesis becomes supplementary to the century old concept of Hope. The value of such a knowledge of physiology is obvious when the subject of treatment comes up. There is a wide application for these principles in the careful management of the individual heart disease and the appreciation of the patient's difficulties and problems. The book should be in the hands of all internists unless they are already familiar with the ideas of Harrison and his associates as presented during the past ten years in various journals. The book presents clinical cardiologists with the latest applications of the altered physiologic function in heart failure.

La rœntgenthérapie des fibromyomes de l'utérus et des métropathies hémorragiques. Par Paul Gibert. Préface du Docteur Antoine Béclère. Paper. Price, 18 francs. Pp. 111, with 10 illustrations. Paris: Masson & Cie, 1935.

This monograph is the answer to controversial points existing among French surgeons and radiologists. The former claim that bleeding uterine myomas and metropathies should be treated only surgically. The treatment of these diseases with radium was originated by the French, while roentgen therapy was simultaneously applied by the French, the Germans and the Americans as early as 1902. The subjects are discussed as follows: The diagnosis considers the abnormal bleeding, the increase in size of the abdomen and the pressure pain in the pelvis with the resultant disturbances in the urinary tract and intestinal canal. The differential diagnosis comprises carcinoma of the corpus and cervix, normal and ectopic pregnancies and adnexal diseases. It is thoroughly described. The mode of action of roentgen rays is twofold: that occurring in the ovary, and that taking place in the myoma. The merits of roentgen radiation and radium rays lead to the opinion that the former is preferable because of its twofold action on ovaries and myoma, while the activity of gamma rays is confined to the endometrium and the myoma. The indications for roentgen therapy are the patient who is a poor surgical risk, the single fibroma, the age, the size and the location. Adnexitis does not form a contraindication to roentgen treatment but to radium insertions. The technic consists in the broken dose method of Béclère. The fractional doses are from 230 to 350 roentgens applied within half an hour. The fields are two, anterior and posterior, and are from 12 to 16 cm. square; the kilovoltage should be above 150. The filter is 0.5 mm. of copper, 2 mm. of aluminum and a wooden plate 2 cm. thick, in which the measuring ionization chamber is placed. The fractions are repeated every two weeks until amenorrhea is attained.

Aids to the Analysis of Food and Drugs. By C. G. Moor, M.A., F.I.C., Public Analyst for the County of Dorset, and William Partridge, F.I.C. Fifth edition revised and partly rewritten by John Ralph Nicholls, B.Sc., F.I.C., Chemist at the Government Laboratory, London. Cloth. Price, $1.50. Pp. 322. Baltimore: William Wood & Company, 1934.

This is essentially a syllabus of pertinent information on composition and analysis of most common foods. It is primarily adapted for the use of practicing food and drug chemists, and, although the subject matter is presented from the standpoint of the public analyst of Great Britain, the value of the book in many respects is international. Standard or best recognized methods of analysis are given. The data on composition and items of specialized information gathered by the experienced laboratory analyst are of particular aid for interpreting analyses and detecting adulteration. Analytic standards where set are given. Chapters are devoted to the common foods, alcoholic beverages, preservatives, prohibited colors, poisonous metals in foods and drugs, crude drugs, miscellaneous pharmacopeial articles, analysis of unknown drugs, commercial disinfectants and soap. The appendix gives some items of legal information.

Endoscopie et pleurolyse (méthodes d'applications et techniques). Par O. M. Mistal, médecin directeur de l'établissement Clovelly, Montana. Préface du Professeur Jacobæus. Bibliothèque de phtisiologie sous la direction de Léon Bernard, professeur de clinique de la tuberculose à la Faculté de médecine de Paris. Paper. Price, 55 francs. Pp. 436, with 184 illustrations. Paris: Masson & Cie, 1935.

The author has presented in clear, concise form the modern methods of dealing precisely with pleural bands and adhesions, one by one, as found by local endoscopic methods. All the procedures are outlined in detail and are contrasted with the relatively gross procedures of thoracotomy. Instruments and instrumentation are well illustrated and clearly described. Pleuroscopes of both the open-tube and the lens-system types are used by the author. The anatomy of the pleural cavity is given from the point of view of the pleuroscopist. The technic and results of direct irradiation of the pleural cavity with ultraviolet rays are described in detail, as is also the author's method of endoscopic transpleural phrenicectomy. The book

as a whole is an important addition to the valuable series of publications in the "Bibliothèque de phtisiologie" that have appeared under the able direction of the late Léon Bernard.

A Textbook of Laboratory Diagnosis with Clinical Applications for Practitioners and Students. By Edwin E. Osgood, M.A., M.D., Assistant Professor of Medicine and Biochemistry, University of Oregon School of Medicine, Portland, Oregon. Second edition. Cloth. Price, $6. Pp. 585, with 37 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1935.

The subject matter in part I of this book is arranged by systems. For example, chapter II is entitled "Disorders of the Kidney and Urinary Tract with Especial Reference to Nephritis"; chapter III, "Disorders of Carbohydrate, Protein and Fat Metabolism with Especial Reference to Diabetes Mellitus, and Disturbances of Acid-Base Equilibrium"; chapter IV, "Pregnancy and Its Complications"; chapter VIII, "Hematology," and so on. The general heading of part II is "Laboratory Methods," and section I in this part of the book is entitled "Use and Calibration of Apparatus"; section II, "Preparation of Standard Solutions"; section III, "Chemistry and Microscopy of the Urine"; section IV, "Blood Chemistry," and so on. This edition has been thoroughly revised. Among the additions are the technic and interpretation of the blood urea clearance test, insulin coefficient, the blood bromide determination, the Friedman test, the galactose tolerance test, the Paul and Bunnell test for heterophile antibodies, and the technic for the quantitative determination of plasma proteins, proteins in cerebrospinal fluid and other body fluids, and the forensic applications of blood grouping. Attention has been given to developments in the diagnosis of hyperinsulinism, hyperparathyroidism, infectious mononucleosis, teratoma testis and iron deficiency anemias. The author has kept in mind the needs of the practitioner in isolated communities, and most of the methods recommended require little or no expensive equipment.

Kurzgefasstes Lehrbuch der Physiologie. Von. Ph. Broemser, o. Professor für Physiologie in München. Paper. Price, 11.50 marks. Pp. 313, with 177 illustrations. Leipzig: Georg Thieme, 1934.

Einführung in die Physiologie der Tiere und des Menschen. Von Gottfried Koller, Privatdozent an der Universität Kiel. Paper. Price, 9.80 marks. Pp. 257, with 38 illustrations. Leipzig: Georg Thieme, 1934.

These two small books were no doubt designed to be companion volumes, for they are about the same size and were issued about the same time and by the same publisher. Broemser's abbreviated textbook, prepared for preclinical students, purports to present a survey of the important facts of physiology with only so much biochemical material as seemed to the author absolutely essential for his general purpose. Koller's book, on the other hand, is designed to introduce biologists to the current knowledge of living processes. It deals essentially with general physiology, discussing cellular metabolism, the body fluids and their movements, various types of motility, cellular products (glandular secretions, heat production and so on), nervous and hormone correlation, and stimulation to sense perception. Both books are devoid of bibliographic references. Of the two, Koller's book has some value from the point of view of the American medical student who reads German. Broemser's book is, on the other hand, too brief, superficial and antiquated for American college students, who are required to have more modern, accurate and extensive knowledge than it contains.

Clinical Diagnosis by Laboratory Methods: A Working Manual of Clinical Pathology. By James Campbell Todd, Ph.B., M.D., and Arthur Hawley Sanford, A.M., M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation). Eighth edition. Cloth. Price, $6. Pp. 792, with 370 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

This volume has the same appearance as the previous edition and is about the same size. However, it has been thoroughly revised, with some rearrangement of material. An entirely new chapter on clinical chemistry has been made and the chapter on the blood rearranged. The material on blood chemistry that was formerly in the chapter on the blood is now in the chapter on clinical chemistry, and the discussion of blood parasites has been transferred to the chapter on animal parasites. The chapter on bacteriology has been enlarged by the addition of discussions of several organisms not found in previous editions. The new chapter on clinical chemistry includes such new material as methods for the determination of cholesterol, lecithin, blood chlorides, uric acid, cysteine and cystine, fibrinogen, calcium, phosphorus and iron. There is a simple test for carotenemia. The rose bengal test and the galactose tolerance test are in the present edition. New material has been added on monocytes, filament-nonfilament counts, Sabin's vital staining technic and Isaac's refractile granule. The Paunz test for amyloidosis is included in this edition; also the new Wintrobe and Landsberg sedimentation method. There is a brief discussion of M and N agglutinogens, and a new diagram to illustrate the relation of blood groups to heredity. There are twenty-five new illustrations.

Investigaciones sobre la enfermedad de Chagas: I: Un nuevo caso mortal de enfermedad de Chagas observado en el Norte Santafecino. Por los Doctores Salvador Mazza, Cecilio Romaña y Bartolomé Parma. II: Dos casos agudos mas de enfermedad de Chagas en el Norte Santafecino. Por el Dr. Cecilio Romaña. Universidad de Buenos Aires, Misión de estudios de patología regional Argentina, Jujuy, Publicación No. 21. Paper. Pp. 32, with 6 illustrations. Buenos Aires: Imprenta de la Universidad, 1935.

The first paper gives a detailed description of the clinical history prior to death and of the microscopic changes in a fatal case of Chagas disease (Trypanosoma Cruzi) in a young child. The second is an outline of clinical and laboratory observations in two acute cases of the same disease. The series of reports to which this publication belongs together with recent publications from both North and South America are extending greatly our knowledge of the varied manifestations of American trypanosomiasis.

Parenthood: Design or Accident? A Manual of Birth-Control. By Michael Fielding, M.D. Preface by H. G. Wells. Cloth. Price, $2.50. Pp. 239, with 8 illustrations. New York: Vanguard Press, 1935.

This manual of contraception, from the pen of a British physician who prefers to write under a pseudonym, is undoubtedly one of the best books on this subject that has yet appeared. The author has a thorough command of the subject and obviously has devoted much careful thought to the preparation of this volume. The subject matter is well arranged and it is presented with a degree of lucidity that may well serve as a model for other writers on medical subjects. The arguments for birth control are developed in remarkably cogent fashion; the criticisms of its opponents are confronted with devastating logic. The author discusses the virtues and deficiencies of all the commonly employed methods of contraception and provides practical instruction on the use of the better ones. The so-called safe period is deflated to its proper dimensions, those of "relative" safety. Appendixes containing useful information on birth control clinics, commercial contraceptive products and other pertinent subjects are included in the book.

Life Begins: Childbirth in Lore and in Literature. By Morris Braude, Associate Professor of Psychiatry, Rush Medical College of the University of Chicago. Cloth. Price, $2. Pp. 163, with 12 illustrations. Chicago: Argus Books, 1935.

In this book the author presents a large variety of peculiar ideas and supersititions about childbirth. Most of these ideas are ancient but, as the author demonstrates, a few of them persist to the present day. Most of these superstitions appear ludicrous and are amusing, but even today some semicivilized peoples regard them as truths. The author shows the fallacies of most of them. He also quotes discussions of these ideas that have appeared in the literature among different races of mankind and at different periods of history. The book should prove interesting and entertaining to persons who are not familiar with the myths of childbirth.

Directions for the Dissection of the Cat. By Robert Payne Bigelow. Second edition. Cloth. Price, 90 cents. Pp. 65, with 5 illustrations. New York: Macmillan Company, 1935.

This small volume is of no interest to the practicing physician nor of much, if any, value to the student who wishes to acquire "a sound knowledge of the elements of mammalian anatomy" unless the student is either already familiar with the various organs and their names, has an instructor constantly at his side during the dissections, or has unlimited time at his disposal for reading up on the dissections of this or other common laboratory animals before trying to use this book.

Medicolegal

Malpractice: Piece of Broken Tonsillotome Blade in Patient's Body; Statute of Limitations.—The defendant, a physician, in May 1925 removed the plaintiff's tonsils. About seven and one-half years later a flat, triangular piece of steel was removed from her rectum or her perineum by another physician. The patient sued the defendant, contending that the piece of steel removed was a piece of the blade of a tonsillotome used by the defendant, which broke in the course of the operation, that he carelessly allowed to escape into her body. In justification of her delay in instituting suit, she contended that the physician-defendant had fraudulently concealed from her the presence of the piece of steel, thus arresting the operation of the statute of limitations. On motion of the defendant, a verdict was rendered in his favor. The plaintiff appealed to the Supreme Court of Utah.

The only evidence tending directly to show that a tonsillotome blade broke in the course of the tonsillectomy was given by the plaintiff and her husband. They testified that the defendant himself, while the operation was in progress, had exclaimed that the blade of the tonsillotome had broken and had asked for another blade. The plaintiff testified that after the tonsils had been removed the defendant swabbed and picked in her throat with long instruments, implying apparently a belief on her part that he was then searching for a piece of the allegedly broken blade; but there was evidence to show that what her physician did was part of the ordinary procedure used in clearing up the field of operation after a tonsillectomy. The defendant offered evidence to show that the piece of steel removed was not a part of a blade of such a tonsillotome as the plaintiffs claimed he had used, but at the same time he offered evidence to show that he had never owned or used a tonsillotome of that kind.

The presence of the piece of steel in the plaintiff's body was not suspected by her, but in January 1932, while she was having a bowel movement, she felt it "move down her bowels and lodge in her rectum." There it was seen by her husband and her sister-in-law, both of whom saw the physician remove it. That physician testified, however, that he removed the steel not from the plaintiff's rectum but from the perineal tissue near the anus. There was evidence to show that before the tonsil operation the patient had been in good health; that after the operation she was in poor health and suffered much pain and remained under the care of the defendant until July 1930; that after the removal of the piece of steel in January 1932 her health improved; but there was also evidence to show that the conditions of which she complained were not connected with the tonsil operation or the treatment for which she employed the defendant.

On behalf of the defendant, expert witnesses testified that the piece of steel said to have been removed from the plaintiff's body could not have remained in her body for the seven and one-half years or so during which she claimed it had been there and that it could not have lodged in the rectum or elsewhere in the alimentary canal. Three physicians testified that, beyond doubt, it was located in the perineal tissue; that it did not go through the alimentary tract; that if it had gone through the lower bowel and passed the sphincter it would have been expelled, and that it could not have cut its way through the lower bowel and into the perineum, from which the operating physician testified he removed it, without infecting the perineum and producing a painful abscess. There was no evidence to show that the defendant knew of the presence of the steel in the plaintiff's body, and at no time while she was under his care did he examine her by the use of x-rays.

Had the plaintiff, said the Supreme Court, proved her allegations of fraud, concealment, false promises or misrepresentations by the defendant, which she claimed prevented her discovery of the facts that she relied on as the basis of her suit, the time when the statute of limitations began to run might have to be considered; but not only did the defendant deny any knowledge of the presence of a piece of steel in the plaintiff's body, but he presented such evidence as in the opinion of the Supreme Court precluded the possibility of any such knowledge on his part and showed the impossibility of the entrance of the piece of steel into the plaintiff's body in the manner claimed. So far as the record disclosed there was no fraudulent concealment, no false promises, and no misrepresentations.

Expert testimony offered by the defendant showed that even if such a piece of steel as was offered in evidence found its way into the alimentary tract it should, in the ordinary course of medical practice, be permitted to pass through without operative surgery. Such evidence showed, too, the absence of any connection between the tonsil operation and the conditions of ill health complained of by the plaintiff. Four physicians testified that a piece of steel such as was described and offered in evidence would have passed through the body without injury or pain. The plaintiff invoked the doctrine of res ipsa loquitur, relying on the alleged presence of the piece of steel in her body to support her claims, but in the opinion of the court, she should have produced expert testimony, if she planned to offset the expert testimony offered by the defendant.

In the light of all the testimony, the Supreme Court could discover no evidence of negligence on the part of the physician-defendant. The judgment of the trial court in his favor was affirmed.

From a lengthy dissenting opinion by Justice Hansen, the following statement of what he believed to be the rule regarding the duty of a physician who has unintentionally left a foreign object in the body of his patient seems worthy of record:

> Fraud or deceit may arise from silence where there is a duty to speak the truth, as well as from the speaking of an untruth. If the defendant knew that he broke the blade at the time he performed the tonsillectomy, and there is evidence tending to show that he did, and if he knew that the blade passed down plaintiff's throat, and there is evidence from which the jury might so find, then and in such case it may not be said as a matter of law that [defendant] was under no duty to inform the plaintiff of such facts or that he was under no duty to ascertain whether it passed, or failed to pass, through her alimentary canal. In view of the existence of the relation of physician and patient, the latter had a right to assume that the former would inform her of such occurrence or that he would take such steps as might be necessary to prevent the blade from causing her any injury. Silence on the part of a physician under such circumstances is calculated to deceive and mislead a patient as well, and probably as effectively, as his protestations that no mishap occurred. It is well settled in courts of equity that a fraudulent concealment of a cause of action will postpone the operation of the statute of limitations until the discovery of the fraud. By the weight of authority the same rule prevails in actions at law. 37 C. J. 972; note in 25 L. R. A. 566. —*Passey v. Budge (Utah), 38 P. (2d) 712.*

Compensation of Physicians: Patient's Wealth a Factor in Determining Physician's Fee.—The plaintiff-physicians sued the executor of Clem's estate for $2,500, which they alleged was the reasonable value of services they rendered Clem during his last illness. In their petition they alleged that the deceased was reputed to be worth in the neighborhood of one million dollars. The defendant moved to strike out this allegation. The trial court, however, denied the motion and held that evidence of the deceased's wealth and ability to pay was admissible. The court refused to instruct the jury that in arriving at what would be a reasonable charge for the physicians' services they should not consider the wealth of the deceased. From a judgment for $2,000 in favor of the physicians, the defendant appealed to the court of civil appeals of Texas, Beaumont.

The question presented, said the court of civil appeals, is whether or not the trial court was correct in permitting the physicians to plead and prove the wealth of their deceased patient and in refusing to instruct the jury to disregard that proof. The authorities elsewhere may be conflicting on the question as to whether or not the financial condition of a patient may be considered in determining the reasonableness of his physician's charge, but it is now the settled rule in Texas that this may be done, and in support of that statement the court cited *Caulk* v. *Anderson*, 120 Texas 253, 37 S. W. (2d) 1008, decided April 1, 1931. The defendant insisted, however, that in the case cited the patient was benefited, his life prolonged and his death averted by the services rendered, while in this case none of these ends was accomplished. Consequently, the defendant argued, the rule laid down in the case cited by the court could not apply. But the court of appeals refused to accept this contention. The purpose of the services was to

accomplish a benefit to the patient, to prolong his life and if possible to avert his death, but in the judgment of the court the right of a physician to recover the reasonable value of services rendered does not depend on the success or failure of the treatment or operation, unless there is a contract to that effect. In the absence of such a contract, the rule of "no cure, no pay" has no application.

The defendant next claimed that the trial court erred in excluding evidence of the amounts charged by different physicians in Beaumont for appendectomies, the operation on which the claims of the physicians in this case were based. We do not believe, said the court of civil appeals, that the determination of what would be reasonable value of the services of one physician, rendered a patient in performing an appendectomy and giving after-treatment, could justly be ascertained by basing the charge on the amount other physicians had theretofore charged in such cases, all varying in degrees of seriousness, complications, and danger.

For the reasons stated, the judgment of the trial court in favor of the physicians was affirmed.—*First National Bank of Beaumont v. Powell (Texas), 76 S. W. (2d) 870.*

Taxes: Salary of Physician Employed by City Hospital Exempt from Federal Income Tax.—Dr. Frank B. Mallory, a full-time pathologist at the Boston City Hospital, owned and operated by the city of Boston, paid under protest a federal income tax on the salary he received from the hospital. He then instituted this suit in the United States district court, district of Massachusetts, against the local collector of internal revenue, to recover the amount so paid.

Our constitutional system of dual sovereign governments, said the district court, impliedly prohibits the federal government from taxing the instrumentalities of a state government. The question to be determined, therefore, is whether or not Dr. Mallory was an officer or employee of a state or of a subdivision thereof, so as to render his salary exempt from the federal income tax. The city of Boston is a municipal corporation and a political subdivision of the state. Furthermore, in the opinion of the court, the Boston City Hospital is an instrumentality of the city. It provides hospital care for the dependent poor and those accidentally injured, prevents and cures contagious diseases and cares for the public health, all of which are, under the circumstances here involved, essential government functions as opposed to proprietary functions. Since Dr. Mallory's services were rendered in connection with an essential government function, his salary, in the judgment of the court, was exempt from taxation by the federal government if he was an officer or employee of the city.

In order to determine whether Dr. Mallory was or was not an officer or employee of the city, the district court referred to article 643 of regulations 74, promulgated by the Commissioner of Internal Revenue under the revenue act of 1928, under which he sought to collect this tax, which provides—

> An officer is a person who occupies a position in the service of the State or political subdivision, the tenure of which is continuous and not temporary and the duties of which are established by law or regulations and not by agreement. An employee is one whose duties consist in the rendition of prescribed services and not the accomplishment of specific objects, and whose services are continuous, not occasional or temporary.

The court was of the opinion that under this definition Dr. Mallory was not an officer of the city. The collector of internal revenue contended that Dr. Mallory was not an employee, but he was an independent contractor, whose income, although paid by the city, was taxable by the federal government. The court, however, referred to the statute authorizing the trustees of the hospital, among other things, to have the general care and control of the hospital and of all branches thereof. The trustees' right of control over Dr. Mallory's work, whether they exercised that control or not, was entirely consistent, in the opinion of the court, with the relation of employer and employee within the meaning of the regulations cited and decisions bearing on the subject. Moreover, Dr. Mallory was required to sign the regular pay roll sheet, was paid by the regular city paymaster, and 4 per cent of his salary was deducted for a pension fund. He had regular working hours and his salary was on a yearly basis. Dr. Mallory was therefore, in the opinion of the court, an employee within the meaning of the pertinent regulations and decisions, and his salary was exempt from federal taxation. Judgment was entered in favor of Dr. Mallory.—*Mallory v. White, 8 F. Supp. 989.*

Compensation of Physicians: Patient's Wealth Not a Factor in Determination of Reasonable Medical Fees.—The plaintiff, a physician, brought suit for $2,400 for professional services to the defendants' minor daughter, comprising seventy-two professional calls, ten office treatments, puncturing the ear drum twice, and a simple mastoid operation. From a judgment in favor of the physician for the full amount, the parents appealed to the St. Louis court of appeals, Missouri.

An expert medical witness, in answer to a hypothetical question, stated that he and other physicians in the community, in determining what constitutes a reasonable charge for medical services, considered jointly the importance of the services rendered and the wealth of the patient; that for a serious procedure of the kind involved in this case his charges would be 10 per cent of the yearly net income of the patient. The refusal of the trial court to strike out this testimony, the defendants contended, constituted reversible error. The physician-plaintiff conceded the soundness of this contention but argued that the error was harmless, as no evidence had been offered relative to the defendants' wealth. But even though there was no such evidence, said the appellate court, the trial court's refusal to strike out the testimony could have led the jury to but one conclusion, namely, that the court believed, and therefore the jury was bound to consider, that the wealth of the parents was a proper element to be taken into consideration in determining the reasonableness of the physician's fee. Such a ruling cannot be considered harmless, continued the court, in view of the strong language used in *Morrell* v. *Lawrence*, 203 Mo. 363, 101 S. W. 571, in which the Supreme Court of Missouri said:

> In a case of this kind, if the plaintiff is entitled to recover at all, he is entitled to recover the reasonable value of the services rendered. He [a physician] is entitled to a verdict for the reasonable value of his services, although the defendant may be a poor man. He is not entitled to a verdict for more than the reasonable value of his services, although the defendant may be a man of great wealth. The jury, in a case of this kind, have no concern with the question of the defendant's ability to satisfy the judgment.

The judgment of the trial court was therefore reversed and the cause remanded for a retrial.—*Scholz v. Mackay (Mo.), 75 S. W. (2d) 604.*

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, November 13-15. Dr. Louis J. Mitchell, 86 E. Randolph St., Chicago, Secretary.

American Clinical and Climatological Association, Princeton, N. J., Oct. 21-23. Dr. Francis M. Rackemann, 263 Beacon Street, Boston, Secretary.

American College of Surgeons, San Francisco, October 28-November 1. Dr. George W. Crile, 40 East Erie St., Chicago.

American Public Health Association, Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street, New York, Executive Secretary.

American Society of Tropical Medicine, St. Louis, November 19-22. Dr. Alfred C. Reed, 350 Post Street, San Francisco, Secretary.

Association of American Medical Colleges, Toronto, Canada, Oct. 28-30. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.

Central Association of Obstetricians and Gynecologists, Omaha, Oct. 10-12. Dr. Ralph A. Reis, 104 South Michigan Boulevard, Chicago, Secretary.

Delaware, Medical Society of, Wilmington, Oct. 8-9. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Gary, Oct. 8-10. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Detroit, October 14-18. Dr. W. B. Peck, 27 E. Stephenson St., Freeport, Ill., Managing Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. Ralph R. Coffey, 1103 Grand Avenue, Kansas City, Mo., Secretary.

Nevada State Medical Association, Elko, Oct. 25-26. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Los Angeles, Nov. 6-9. Dr. T. Floyd Bell, 400 29th Street, Oakland, Calif., Secretary.

Southern Medical Association, St. Louis, November 19-22. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Rutland, Oct. 17-18. Dr. William G. Ricker, 33 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 15-17. Miss A. V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

2: 333-390 (Aug.) 1935

Etiology of Peptic Ulcer: Analysis of Seventy Ulcer Patients. S. C. Robinson, Chicago.—p. 333.

Follow Up of Ulcerative Colitis (Nonspecific). B. B. Crohn and B. D. Rosenak, New York.—p. 343.

The Acutely Ill, Jaundiced Patient: Report of Twenty-One Instances of Hepatic Icterus, Seven of Whom Had High Blood Nitrogen. S. G. Meyers, O. A. Brines and B. Juliar, Detroit.—p. 346.

Clinical Review of Giardiasis: Twenty-Two Cases Observed During Study of Five Hundred and Seventy-Two Private Patients. G. S. de Paula e Silva, Bello-Horizonte, Brazil.—p. 350.

Consideration of the Patient with Gastro-Intestinal Complaints But Who Is Without Evidences of Organic Pathology. G. A. Young and R. H. Young, Omaha.—p. 353.

Nontuberculous Mesenteric Lymphadenitis in Childhood. L. H. Segar, Indianapolis, and B. D. Rosenak, New York.—p. 356.

*Effect of Oxygen Inhalation on Gaseous Distention of Stomach and Small Intestine. J. Fine, J. B. Sears and B. M. Banks, Boston.—p. 361.

Rôle of Serum Calcium Fractions in Effect of Viosterol on Bleeding Tendency in Jaundice. J. S. Gray and A. C. Ivy, Chicago.—p. 368.

Appendical Abscess: Roentgenologic Consideration, with Especial Reference to Diagnosis Difficulties and Its Differential Diagnosis. M. Feldman, Baltimore.—p. 373.

Management of Esophagitis: Article I, II and III. W. A. Bastedo, New York; J. Friedenwald, Baltimore, and H. W. Soper, St. Louis.—p. 379.

Effect of Oxygen Inhalation on Distention of Stomach.—In comparing the effect on cats of breathing pure oxygen with that of air on the change in total gas and nitrogen volume in the small intestine distended with nitrogen and ligated at the pylorus and ileocecal valve, Fine and his associates observed that: 1. In cats breathing air the total gas volume in the small intestine is reduced 13.1 per cent within twelve hours. 2. In cats breathing oxygen a progressive decline in total gas volume in the small intestine occurs until a maximal reduction averaging 59.2 per cent is reached in twenty-four hours. 3. When air is breathed, the average decrease in volume of nitrogen in the small intestine after twelve hours equals 21.1 per cent. After twenty-four hours this decrease equals only 12.9 per cent. 4. When oxygen is breathed, an average of 44.9 per cent of the nitrogen in the small intestine is absorbed during the first twelve hours. An additional 17.4 per cent disappears in the succeeding twelve hours. A comparison of the effect of breathing pure oxygen with that of air on the change in total gas and nitrogen volume in the stomach distended with nitrogen and ligated at the cardia and pylorus showed that the total gas volume in the stomach was approximately the same after periods varying from six to twenty-four hours as at the beginning and that this was the case whether air or oxygen was used. In many instances a little more gas was recovered than was injected. Cats breathing oxygen, however, usually had a somewhat smaller residual volume than those breathing air. When air is breathed, the absorption of nitrogen from the small intestine at the end of twenty-four hours is 6 per cent and from the stomach 2.1 per cent. When oxygen is breathed, the corresponding figures are 62.3 per cent and 6 per cent. When the small intestine of an air-breathing cat is inflated with hydrogen, the percentage reduction of total gas volume after a given period is much greater than when the intestine is inflated with nitrogen. This is due to the fact that hydrogen has a much higher diffusibility coefficient than nitrogen. The inhalation of oxygen in place of air considerably increases the percentage reduction of total gas volume in the small intestine. When the stomach of an air-breathing cat is inflated with hydrogen the total gas volume is reduced to a much smaller extent than in the small intestine. The observations are similar to those obtained when nitrogen is used as the distending gas, but the mechanism involved is not the same. It appears that the absorption of hydrogen from the stomach and small intestine is at least as efficient in the cat breathing air as in the cat breathing oxygen. Nevertheless, by preventing the diffusion of nitrogen into the gastro-intestinal tract from the blood, oxygen accomplishes a greater eventual decrease in total gas volume in the small intestine. The authors state that, if the use of 100 per cent oxygen for a period of not less than twelve hours is to be considered for clinical application for the relief of gaseous distention, it is essential to inquire whether interruptions to continuous administration, which feeding and nursing may demand, would, by temporarily admitting nitrogen into the blood, substantially reduce the beneficial effects of the oxygen already inhaled. In six experiments, pure oxygen was given for four three-hour periods, with intervals of air breathing varying from one half to one hour. The residual gas volumes compared favorably with those obtained by continuous oxygen inhalation. The volume of nitrogen that may diffuse into the intestine during the air breathing interval is apparently insufficient to vitiate the decrease in volume effected by the oxygen already inhaled. Intermittent oxygen, allowing reasonable periods for rest, feeding or nursing, may therefore be expected to accomplish about the same results as continuous oxygen.

American Journal of Medical Sciences, Philadelphia

190: 145-290 (Aug.) 1935

*The Pituitary in Experimental Cretinism: I. Structural Changes in Pituitaries of Thyroidectomized Rats. I. T. Zeckwer, L. W. Davison, T. B. Keller and C. S. Livingood II, Philadelphia.—p. 145.

*Complete Insulin Resistance in Diabetes. E. Wayburn, San Francisco.—p. 157.

Study of Blood Sugar of Epileptics. G. N. Tyson Jr., Louise Otis, Pomona, Calif., and T. F. Joyce, Spadra, Calif.—p. 164.

Relation of Experimental Skin Infection to Carbohydrate Metabolism: Effect of Hypertonic Glucose and Sodium Chloride Solutions Injected Intraperitoneally. D. M. Pillsbury, Philadelphia, and G. V. Kulchar, San Francisco.—p. 169.

Lymphopathia Venereum (Lymphogranuloma Inguinale) and Its Relation to Rectal Stricture. J. B. Vander Veer, Philadelphia; F. E. Cormia, Montreal, and J. C. Ullery, Philadelphia.—p. 178.

Studies in Hypertension: I. Production of Experimental Hypertension and Correlated Effect on Nitrogen Distribution of Blood Proteins. H. A. Rafsky, A. Bernhard and G. L. Rohdenburg, New York.—p. 187.

Hereditary Onychial Dysplasia. M. E. Hobbs, St. John, N. B.—p. 200.

*Therapy in Carbolic Acid Poisoning, with Especial Reference to Use of Oil Antidotes. L. Goodman and A. J. Geiger, New Haven, Conn.—p. 206.

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Cerebrospinal Fluid During and Between Attacks of Migraine Headaches. T. J. C. von Storch and H. H. Merritt, Boston.—p. 226.

Allergy in Migraine-like Headaches. J. M. Sheldon and T. G. Randolph, Ann Arbor, Mich.—p. 232.

Relationship Between Urinary Creatinine and Total Body Creatine, Surface Area and Body Weight. F. W. Kinard, J. C. Aull Jr. and J. Van de Erve, Charleston, S. C.—p. 237.

Failure of Intravenous Hydrochloric Acid to Shorten Anesthesia. F. W. Kinard and J. Van de Erve, Charleston, S. C.—p. 242.

Multiple Myeloma with Hyperproteinemia: Case Report. C. F. Sweigert, San Francisco.—p. 245.

Paradoxical Pleural Pressures: Their Relation to Kienboeck Phenomenon. B. P. Stivelman, New York.—p. 256.

Familial Purpura: Report of Two Cases. F. R. Bailey and K. R. McAlpin, New York.—p. 263.

The Pituitary in Experimental Cretinism.—Zeckwer and his associates observed that thyroidectomy in young rats results in stunting of body growth, an increased weight of the pituitary due both to increased solids and to increased fluid content, a marked reduction or nearly complete disappearance of acidophils, an increase in the number of basic staining cells and the appearance of great numbers of large cells filled with hyaline substance. These "thyroidectomy cells" appear, according to the special staining technic used, to be transformed cells containing blue granules. The "thyroidectomy cells" appear to be secreting and storing a secretory product that is hyaline in appearance. The stunting of body growth in the cretin rat may be due to loss of acidophils of the pituitary, which in turn depends on loss of the thyroid secretion. Acidophils seem to disappear by degranulation rather than by frank degeneration. An abundance of thyrotropic hormone was found to be present in certain pituitaries depleted of acidophils, a finding that rules out the acidophil cell as the producer of thyrotropic hormone.

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Since there is no atrophy of the adrenals in cretin rats, it is reasonable to consider that the acidophils cannot be the producers of the adrenotropic hormone. When thyroidectomy is incomplete, the foregoing changes are slight or absent.

Complete Insulin Resistance in Diabetes. — Wayburn presents the case of a woman who, before June 1934, had diabetes of moderate severity, with a complication of bilateral pulmonary tuberculosis, both of which were steadily advancing. July 20 she was sugar-free on a diet of carbohydrate 175, protein 75, fat 75, and 87 units of insulin. In the course of a few days she showed large amounts of sugar in the urine despite huge and increasing doses of insulin. The attempt was made to keep her on a diet sufficient for the tuberculosis and to cover the deficiency of carbohydrate metabolism with enough insulin. For a time it seemed as though this might be successful. Later, when it obviously was not, an attempt was made to reduce the insulin dosage abruptly. This was followed by a quick death. It is reasonable to suppose that, had the insulin dosage been further increased, the result would have eventually been the same, as was the case with Root's patient. The patient's ability to utilize sugar was enhanced by the use of large amounts of insulin, but it was apparently impossible to keep her from excreting sugar into the urine until something happened within her own organism to reduce her resistance. During this spontaneous partial remission, little dextrose appeared in the urine. Then, on doses of insulin larger than before, her resistance again increased until there was as much sugar in the urine on 415 units of insulin daily as there had been three weeks before on 200. However, the proof that the insulin, far in excess of what could be utilized, was serving a purpose is shown by the fact that within eighteen hours after a smaller dosage was attempted the patient was in coma and died within twenty-eight hours, although the amount of insulin was still far in excess of that ordinarily sufficient. Although the etiology of resistance to insulin is not known, most observers agree in placing the responsible factors outside the pancreas. Häusler and Högler, and Häusler and Loewi concluded that the cause of the resistance lies in the inaccessibility of the body cells to the action of insulin. Himsworth has brought forth evidence to indicate that the insulin excreted by the pancreas is inactive and requires an unknown activator to transform it into utilizable substance. The absence of this companion substance in the blood might conceivably result in the phenomenon of insulin resistance. That the liver plays a large part in the production of insulin resistance is indicated in the preponderance of cases of liver disease and by the importance of the liver in carbohydrate metabolism. The existence of an antiinsulin in the liver has been postulated but has not yet been proved.

Therapy in Phenol Poisoning.—From their experiments, Goodman and Geiger conclude that there is little doubt that liquid petrolatum has no place in the physician's limited armamentarium against acute phenol poisoning. Phenol and related substances are commonly used chemicals and still cause a large proportion of deaths from poisoning. For this reason they considered it desirable to observe the antidotal value of liquid petrolatum in animal experimentation and to raise a note of warning concerning its use in cases of human poisoning. Experiments with olive oil grew out of the failure of liquid petrolatum to achieve the results that might reasonably be expected of rational treatment. The survival figures for olive oil seem definitely encouraging. While the authors realize all the caution and qualifications necessary for the transference of the conclusions drawn from animal investigation to man, they still feel that, since the treatment of phenol poisoning is so limited and unsatisfactory, the trial of olive oil is justifiable. Olive oil could be administered promptly in as large a quantity as possible, preferably by having the patient drink it. Then the stomach tube can usually be quickly passed with safety and lavage performed with generous quantities of olive oil. Before removal of the stomach tube fresh oil could be instilled and allowed to remain. The physiologic principles of treatment outlined recently by Peters and his co-workers for acute mercury poisoning apply equally well to phenol, since there is analogous gastro-intestinal, renal and vascular injury with consequent diminution of serum proteins and disturbance of the fluid and sodium chloride stores of the body. Particular attention should be paid to the liberal administration of parenteral fluids and electrolytes of suitable composition and, perhaps, to the provision of blood by transfusion. If a cathartic is given, the choice should fall perhaps on castor oil, which in itself is an even better solvent for phenol than is olive oil. Poisoning by compound solution of cresol and other derivatives of cresol has in general the same therapeutic implications as those of phenol.

American J. Obstetrics and Gynecology, St. Louis

30: 159-308 (Aug.) 1935

Parallel Study of Labor in Young and Old Primiparas: Based on Critical Analysis of Three Hundred and Seventy-Two Cases Below Twenty and Above Thirty-Five Years of Age. J. N. Nathanson, New York.—p. 159.

Effect of Administration of Preparations of Growth Hormone of Anterior Lobe of Pituitary on Gestation and Weight of the New-Born (Albino Rats). Ruth M. Watts, Chicago.—p. 174.

Hormone Induction of Menstruation in Amenorrheas of from Three Months' to Nine Years' Duration. C. W. Dunn, Philadelphia.—p. 186.

Analysis of Three Hundred and Eighty-One Cesarean Section Cases in Ten Year Period at Michael Reese Hospital. I. F. Stein and M. L. Leventhal, Chicago.—p. 192.

Porro Cesarean Section: Analysis of Fifty-Three Cases: Significance of Indications. A. F. Lash and W. G. Cummings, Chicago.—p. 199.

Cesarean Section: Analysis of Five Hundred Consecutive Operations. E. F. Daily, Chicago.—p. 204.

Review of Twenty-Six Cases of Extraperitoneal (Latzko) Cesarean Section. J. F. Norton, Jersey City, N. J.—p. 209.

*Therapeutic Value of Low Dosage Irradiation of Pituitary Gland and Ovaries in Functional Menstrual Disorders. C. Mazer and L. Spitz Jr., Philadelphia.—p. 214.

Blood Loss During Cesarean Section. W. J. Dieckmann and E. F. Daily, Chicago.—p. 221.

Treatment of Abruptio Placentae. J. A. McGlinn and W. B. Harer, Philadelphia.—p. 226.

Studies in Glutathione: I. Total and Reduced Glutathione, Oxygen Content and Capacity, and Cell Volume of Blood in Nonpregnant and Pregnant Women, with Especial Reference to Toxemias of Pregnancy. F. W. Oberst and E. B. Woods, Iowa City.—p. 232.

Total versus Subtotal Abdominal Hysterectomy in Benign Uterine Disease. E. H. Richardson, Baltimore.—p. 237.

Review of One Hundred and Ninety Cases of Heart Disease Complicating Pregnancy. B. J. Hanley and J. F. Anderson, Los Angeles.—p. 243.

*Primiparous Perineum After Forceps Delivery: Follow-Up Comparison of Results With and Without Episiotomy. F. B. Nugent, Reading, Pa.—p. 249.

Current Technics for Obstetric Analgesia and Anesthesia. C. Gould and B. C. Hirst, Philadelphia.—p. 257.

Extra-Uterine Pregnancy: Clinical Study of Five Hundred Cases. J. E. Fitzgerald and J. I. Brewer, Chicago.—p. 264.

Series of Six Hundred and Twenty-Seven Vaginal Hysterectomies Performed for Benign Disease with Three Deaths. N. S. Heaney, Chicago.—p. 269.

Vaginal Aplasia and Creation of an Artificial Vagina. S. L. Israel, Philadelphia.—p. 273.

Cancer of Cervix and Vagina in Case of Complete Procidentia. L. Brady, Baltimore.—p. 277.

Pregnancy in Patient with Complete Double Uterus. B. Green and C. K. Miller, Philadelphia.—p. 281.

Bilateral Peripheral Paralysis of Radial Nerve in a New-Born Infant. L. H. Smith, Portland, Ore.—p. 283.

Ovarian Pregnancy: Report of Case. H. J. Holloway, Evanston, Ill.—p. 286.

Human Ovum in Salpingitis Isthmica Nodosa. A. F. Lash, Chicago.—p. 287.

Myofibroma of Ovary with Heteroplastic Bone Formation. I. F. Stein, Chicago.—p. 289.

Chronic Typhoid Abscess of Ovary: Report of Case. L. A. Soloff and C. S. Hermann, Philadelphia.—p. 290.

Abdominal Pregnancy, with Delivery of Living Child. A. C. Posner, New York.—p. 293.

Inversion of Uterus in Two Successive Pregnancies. P. C. Fox, Oak Park, Ill.—p. 295.

Lipoma of Broad Ligament. A. E. Kanter, Chicago.—p. 296.

Fetus Papyraceus in Twin Pregnancy: Report of Case. J. G. Crotty, Cincinnati.—p. 296.

Modified Vaginal Speculum. W. D. Fullerton, Cleveland.—p. 297.

Low Dosage Irradiation of Pituitary and Ovaries in Menstrual Disorders.—Mazer and Spitz state that twenty-three of forty-seven women suffering from severe amenorrhea have been menstruating regularly without the stimulus of incidental pregnancies for periods averaging 2.3 years following low dosage irradiation of the ovaries and pituitary. Normal menstruation was restored in eight of fifteen women suffering from a milder form of amenorrhea (oligomenorrhea), without the aid of incidental pregnancies. Ten additional patients of the twelve, who conceived soon after roentgen treatment, have been menstruating regularly for periods averaging 2.5 years. Ten of thirteen patients of child-bearing age suffering from

dysfunctional metrorrhagia of long duration were cured by one course of treatment. Associated sterility was relieved in twenty of thirty-eight women who had no ascertainable cause to account for the condition other than menstrual disturbances. Primary dysmenorrhea was an associated symptom in fourteen of 102 patients treated. Five of the fourteen were completely and permanently relieved without the aid of incidental pregnancies. The menstrual rhythm of seventeen regularly menstruating women was not disturbed by the treatment. Seven of eleven amenorrheic women responded after a second or third course of treatment given at intervals of three months; the condition of the remaining four was not aggravated by repeated exposures. It is assumed, therefore, that the roentgen treatment was not responsible for the aggravation of the amenorrhea of the two patients who had received only single courses of treatment. Twenty-six healthy children were born to women who had received the treatment.

Primiparous Perineum After Forceps Delivery.—Nugent compared the results of 202 primiparas delivered at term by forceps with and without episiotomy. An analysis of morbidity suggests that there is a definite increase in morbidity attendant on episiotomy and that the increase is only partially dependent on the increased complexity of operative procedures, the percentage of intercurrent infection and the longer duration of labor in the episiotomy series. The mediolateral type of episiotomy is suggested as the safer in the prevention of third degree lacerations. Much better anatomic results were obtained following episiotomy and repair. The author believes that the better results are attributable to the easier recognition of the extent of injury done in episiotomy and the simplification of the repair when a surgical laceration is produced. It is shown that episiotomy spares the anterior wall and that, when the spontaneous laceration approaches adequate episiotomy, the percentage of unsatisfactory results is less. The fallacies of examination in attempting to determine the exact amount of damage done immediately after delivery without episiotomy is shown. It is further suggested that the indication for episiotomy becomes mandatory in proportion as the age of the primipara exceeds 20 years. Many of the series are inconclusive because of the smallness of the subgroups. They are presented not as adequate studies but as indexes of the trends and the need for additional investigation.

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American Journal of Ophthalmology, St. Louis

18: 699-800 (Aug.) 1935.

Ophthalmomyiasis: Review of Literature and Report of Case of Ophthalmomyiasis Interna Posterior. W. B. Anderson, Durham, N. C.—p. 699.

Sodium Content of Aqueous, Vitreous and Serum: Comparative Study on Oxen. P. W. Salit, Iowa City.—p. 706.

Glaucoma Accompanying Nevus Flammeus. E. B. Dunphy, Boston.—p. 709.

Some Clinical Observations on Aniseikonia. W. L. Hughes, Hempstead, L. I., N. Y.—p. 715.

Cerebrospinal Fluid Studies in Ten Cases of Tobacco Alcohol Amblyopia. F. D. Carroll, New York.—p. 720.

Reticulum in Chronically Hyperplastic Conjunctiva. H. D. Lamb, St. Louis.—p. 724.

Critique of Glaucoma Operations. H. S. Gradle, Chicago.—p. 730.

Uveoparotid Tuberculosis: Report of Two Cases. I. D. Kruskal and J. M. Levitt, Brooklyn.—p. 735.

Intracapsular Extraction of Crystalline Lens with Electrodiaphakia: Method of Lopez Lacarrère. Angel Moreu, Valencia, Spain, translated by W. H. Crisp.—p. 739.

*Recession Operation with Control Suture: Using Correction Lenses to Effect Muscle Balance During Convalescence. O. B. Nugent, Chicago.—p. 744.

Recession Operation with Control Suture.—Nugent describes an operation for the correction of heterotropia and heterophoria, a suture being used by which the muscle can be readjusted, if necessary, during the first few days of convalescence. The eyes are not occluded with bandages or eye patches, but instead correction lenses are worn, thereby preserving a state of functional rest in the extrinsic muscles. Any overcorrection or undercorrection that may appear in the first three or four days can be adjusted by means of the suture. The benefits hoped for are the mechanical correction of the strabismus, producing a cosmetic effect, and the reestablishment of binocular single vision. The former can be secured in almost every case, the latter only when fusion is present or can be developed subsequently.

Archives of Ophthalmology, Chicago

14: 183-324 (Aug.) 1935

Lymphoma of Eye and Adnexa: Report of Thirteen Cases. P. J. Leinfelder and C. S. O'Brien, Iowa City.—p. 183.

Bilateral Retinal Glioma Treated by Radiation: Clinical and Histologic Report. A. G. Fewell and W. E. Fry, Philadelphia.—p. 190.

*Inclusion Bodies in Ophthalmia Neonatorum: Further Note. S. R. Gifford and N. K. Lazar, Chicago.—p. 197.

Short Studies on History of Ophthalmology: II. Sir Jonathan Hutchinson, Greatest "Generalized Specialist," and His Contribution to Ophthalmology. B. Chance, Philadelphia.—p. 203.

Primary Melanosarcoma of the Optic Disk. J. Levine, New York.—p. 229.

Uveitis with Associated Alopecia, Poliosis, Vitiligo and Deafness: Report of Case. W. S. Davies, Ann Arbor, Mich.—p. 239.

*Effect of Extract from Cataractous Human Lenses on Senile Cataract. E. Selinger, Chicago.—p. 244.

Intracapsular Cataract Extraction by the Knapp Method as Compared with the Classic Procedure: Further Report. L. F. Appleman, Philadelphia.—p. 249.

Effect of Experimental Diabetes on Cornea of Dogs: Its Relationship to Administration of Vitamin A. Elaine P. Ralli, E. B. Gresser and G. Flaum, New York.—p. 253.

Inclusion Bodies in Ophthalmia Neonatorum.—Gifford and Lazar applied a 2 per cent infusion of senega to the conjunctiva of two adults, but no inclusion bodies could be demonstrated. Twenty-six infants several days old were treated with the drug. The infants had shown no previous secretion, and only one eye of each infant was treated. A moderate reaction was produced, which subsided within from twenty-four to forty-eight hours unless the drug was administered again. Scrapings made during the period of discharge showed inclusions in three instances, which the authors considered identical with those found in inclusion blennorrhea. They were especially numerous in the scrapings from one baby, four being found in one microscopic field and many others in the preparation, and these were obtained on several subsequent examinations. Five days after the last instillation of the drug the reaction had subsided entirely and no more inclusions were found. The other eye remained normal during this time, and subsequently in preparations from the other twenty-three infants no characteristic bodies were found. The preparations were submitted to several investigators, all of whom believed that the bodies could not be differentiated from those seen in cases of trachoma and inclusion blennorrhea. After a renewed comparison of this material with preparations from three fresh cases of blennorrhea in which numerous inclusions were evident, the authors were forced to admit that certain differences between the preparations of animal and those of human material were marked enough to differentiate between them. But between the material from their patients with inclusion blennorrhea and that from three normal babies treated with senega no such difference existed. In attempts to repeat their observations, twenty-seven infants were treated, but in no case of this new series were inclusions found. As a result of their experiences they assume that the virus of inclusion blennorrhea was present in their three infants in a latent form and that the use of a chemical irritant stimulated its growth so that it was found easily in preparations for from five to seven days, during which increased secretion was present. Against Thygeson's explanation are the facts that scrapings made before the instillation gave negative results, as did the scrapings after the short period of increased secretion, and that no signs of the chronic stage of inclusion blennorrhea were present, which is a sequence of events unknown in inclusion blennorrhea. There seems to be no reason why the virus cannot be present in a latent stage or in an avirulent form, a condition known to occur in carriers of Bacillus diphtheriae or the meningococcus. The finding of inclusion bodies in the normal conjunctiva was reported by McKee and Addario. The authors state that it must not be concluded from the work of Thygeson that inclusion blennorrhea is the only form of nongonorrheal conjunctivitis of the new-born infant.

Effect of Extract from Cataractous Lenses on Senile Cataract.—Selinger states that many factors influence the progress of lens opacities and that the rate of development of senile cataract varies in different patients and even in the two eyes of the same patient. The use of extracts from noncataractous beef lenses should favor, instead of retard, the development of lens opacities. Extracts from cataractous human lenses seem

to have no effect on the progress of senile cataract. The author has employed these extracts in five cases of bilateral incipient progressive senile cortical opacities. Patient 1 had an initial improvement in visual acuity from 6/200 to 0.2 in the left eye, but four months after the beginning of the treatment vision in this eye was reduced to perception of light. In case 4 there occurred a similar early improvement in visual acuity. Examination fifteen months later showed a marked decrease of vision in one eye. Patient 5 had no change in her visual acuity after four months, and patient 3 maintained her original visual acuity for eighteen months. Patient 2 was the only one whose vision remained improved after fifteen months, although the slit lamp revealed that the cataracts were still progressing.

Archives of Pathology, Chicago

20: 175-336 (Aug.) 1935

*Two Rare Instances of Cardiovalvular Disease Presumptively Syphilitic in Origin. A. R. Sohval, New York.—p. 175.
Vascular Lesions in Surgically Excised Stomachs. G. H. Fetterman, Mayview, Pa.—p. 189.
Early Lesions Following Intravenous Administration of Filtrable Staphylococcus Toxin: Study on Dog and Rabbit. R. H. Rigdon, Durham, N. C.—p. 201.
*Histamine and Leukocytosis. V. H. Moon, M. M. Lieber and P. J. Kennedy, Philadelphia.—p. 209.
Behavior of Transplanted Spleen, with Especial Reference to Tissue Differential of Hematopoietic Organs. M. Silberberg, Halifax, N. S. —p. 216.
Effect of Hypophysectomy on Natural Resistance of Adult Albino Rats to Histamine Poisoning. D. Perla and S. H. Rosen, New York.—p. 222.
Proteolytic Enzymes of Monocytic and Polymorphonuclear Pleural Exudates. C. Weiss and E. J. Czarnetzky, San Francisco.—p. 233.
*Duplication of Meckel's Diverticulum with Other Congenital Anomalies. L. A. Carlson, Rochester, Minn.—p. 245.

Cardiovalvular Disease Presumptively Syphilitic in Origin.—Sohval presents two cases that showed macroscopic and histologic lesions which, when considered in connection with those in other cases recorded in the literature, are extremely suggestive of syphilis. They point to the existence of tertiary syphilitic cardiac lesions that are not distinctly gummatous. It appears that, in addition to diffuse and localized gummatous lesions, a third type of syphilitic involvement can be recognized in which coagulation necrosis and giant cells are absent. The gross appearance of the lesion is that of a fairly well circumscribed, densely sclerotic, whitish, cartilaginous mass. In a valve it produces marked thickening of the structure. The histologic picture is one of dense irregular or whorled connective tissue formation. Valvular elastic lamellae are reduplicated and frayed. The entire lesion is apt to be extensively vascularized; capillaries and arterioles with obliterative endarterial lesions are found. These are usually surrounded by focal accumulations of lymphocytes, plasma cells and large mononuclear cells. Diffuse cellular infiltrations are likewise present. In the anterior leaflet of the mitral valve the process arises by extension from syphilitic disease at the root of the aorta. The picture is that of a well scarred granuloma in which necrotic foci have disappeared. The fact that coagulation necrosis is absent should not exclude the diagnosis of syphilis any more than it does in the case of syphilitic aortitis. The lesion in the mitral valve in the cases of Friedman and Staemmler belongs to this type of granulomatous involvement, differing, however, by possessing areas of coagulation necrosis and less prominent fibrosis; i. e., a more active type of granuloma.

Histamine and Leukocytosis.—Moon and his associates counted the leukocytes in the blood of adult cats before and at intervals following the intravenous injection of small amounts of a sterile solution of histamine phosphate. Differential counts showed that the increase consisted of polymorphonuclear neutrophils. In each instance the blood picture returned to normal within twenty-four hours. In three instances a decrease in the number of leukocytes was seen within one hour. In each instance the leukopenia was transient and was followed by definite leukocytosis. Injections of 2 mg. usually produced transient shocklike phenomena. In another experiment three monkeys (Macacus rhesus) were given subcutaneous injections of varying doses of histamine phosphate in physiologic solution of sodium chloride. Leukocyte counts were made immediately before and at intervals following the injections. A sharp rise in the leukocyte count followed the injection of even 0.75 mg. of histamine. The increase consisted of polymorphonuclear neutrophils. The maximal leukocytosis usually occurred from two to four hours following the injection. This result may be compared to the high leukocytosis that follows extensive burns of the skin in man. The subcutaneous injection of histamine was followed by leukocytosis in monkeys. Histamine phosphate in doses of from 0.5 to 1 mg. in sterile solution was given intravenously to seven young men. The leukocytes in the blood were counted immediately before and at intervals following the injections. A moderate leukocytosis occurred regularly, with an average increase of 3,000 leukocytes from three to five hours following the injection. The count returned to normal within twenty-four hours. In several instances a slight leukopenia was found one hour after the injection. This was followed by an increase in the leukocyte count in each case. Control counts at corresponding intervals were made on the same subjects. The intravenous injection of histamine produced a characteristic circulatory reaction. The face at first was flushed but immediately became pale. This was accompanied by a metallic taste in the mouth, dizziness, faintness and frontal headache. The radial pulse was rapid and sometimes weak. The headache sometimes lasted several hours, but the other manifestations disappeared within thirty minutes. Histamine phosphate was given by subcutaneous injection to another group of volunteers. In these the results varied with the amounts of histamine given. In three subjects receiving 2 mg. the leukocyte counts remained within normal limits throughout the course of the experiment. One subject receiving 2.5 mg. showed a maximal rise of 4,650 leukocytes in three hours. Another subject receiving 3 mg. showed a maximal increase of 2,200 in five hours. In the four subjects given 5 mg. of histamine phosphate a decrease in the number of leukocytes occurred in the first hour, followed regularly by an average increase of 3,340 leukocytes in from five to seven hours. Control counts made at corresponding intervals on another day showed no significant variations from normal. The polymorphonuclear neutrophils were the only cells showing significant numerical variations both in this group and in those receiving histamine intravenously. The subcutaneous injections produced general manifestations similar to those following intravenous injections, but less in degree.

Duplication of Meckel's Diverticulum.—Carlson observed duplication of Meckel's diverticulum in a 38 weeks old male hydrocephalic fetus. This condition was associated with anomalies of the nervous, cardiovascular and respiratory systems. He reasoned that in this case the process of atrophy of the omphalomesenteric duct was both altered and delayed, resulting in bifurcation of the tip similar to that which occurred in the case reported by Fitz. This bifurcation continued from the tip of the partially involuted omphalomesenteric duct to the base, with the result that the duct was divided neatly into two parts, each of which has a separate opening into the intestine. With the further growth of the intestinal tract each diverticulum grew independently and separated from its fellow by a distance equal to the increase in length of the intervening portion of intestine.

Canadian Public Health Journal, Toronto

26: 367-418 (Aug.) 1935

Administrative Aids to Rural Health Service. C. L. Scamman, New York.—p. 367.
The Alberta Health Insurance Act. A. C. McGugan, Edmonton, Alta. —p. 373.
Vitamin D Milk. E. W. McHenry, Toronto.—p. 377.
The Place of the Family Doctor in a Public Health Program. W. Woolner, Ayr, Ont.—p. 381.
The History of the Department of Public Health of Alberta. M. R. Bow and F. T. Cook, Edmonton, Alta.—p. 384.

Indiana State Medical Assn. Journal, Indianapolis

28: 365-416 (Aug. 1) 1935

Appendicitis. P. G. Skillern, South Bend.—p. 365.
Safe Technic for Circumcision. H. D. Cogswell, Indianapolis.—p. 371.
Cancer of Rectum. H. H. Wheeler, Indianapolis.—p. 372.
Surgery of the Thyroid Gland. C. A. Nafe, Indianapolis.—p. 377.
Modified Type of Siphon Drainage Apparatus of Mariotte Principle. H. M. Banks and M. N. Hadley, Indianapolis.—p. 381.
Catgut Allergy: Case Report. H. D. Tripp, Kewanna.—p. 383.

Journal of Bacteriology, Baltimore

30: 119-212 (Aug.) 1935

Studies on Pneumococcus Variation: II. Smooth Virulent Variants Produced by Daughter-Colony Dissociation of Smooth Pneumococcus Strains. M. D. Eaton, New Haven, Conn.—p. 119.

Stimulation of Bacterial Growth Rate by Methyl Germanic Oxide. P. L. Carpenter, M. Fulton and C. A. Stuart, Providence, R. I.—p. 137.

Can Azotobacter Chroococcum Synthesize Vitamin D? J. E. Greaves, Logan, Utah.—p. 143.

Interrelation of Amount of V-Factor and Amount of Air Necessary for Growth of Hemophilus Influenzae Type b in Certain Mediums. Margaret Pittman, New York.—p. 149.

Some Observations on Germicidal Efficiency of Chloramine-T and Calcium Hypochlorite. D. B. Charlton and M. Levine, Ames, Iowa.—p. 163.

Physiologic Studies on Rhizobium: IV. Utilization of Carbonaceous Materials. O. R. Neal and R. H. Walker, Ames, Iowa.—p. 173.

Study of Acid and Gas Formation by Members of Colon-Aerogenes-Intermediate Groups in Presence of Certain Sugar Alcohols and Their Anhydrides. K. P. Dozois, F. Hachtel, C. J. Carr and J. C. Krantz Jr., Baltimore.—p. 189.

Microscopic Method of Distinguishing Dead from Living Bacterial Cells. G. Knaysi, Ithaca, N. Y.—p. 193.

Quantitative Differential Method for Counting Mixed Cultures of Bacteria. E. H. Anderson and C. A. Stuart, Providence, R. I.—p. 207.

Journal of Experimental Medicine, New York

62: 129-288 (Aug. 1) 1935

Studies on Immune Response of Rheumatic Subject and Its Relationship to Activity of Rheumatic Process: I. Determination of Antistreptolysin Titer. A. F. Coburn and Ruth H. Pauli, New York.—p. 129.

Id.: II. Observations on Epidemic of Influenza Followed by Hemolytic Streptococcus Infections in Rheumatic Colony. A. F. Coburn and Ruth H. Pauli, New York.—p. 137.

*Id.: III. Observations on Reactions of Rheumatic Group to an Epidemic Infection with Hemolytic Streptococcus of Single Type. A. F. Coburn and Ruth H. Pauli, New York.—p. 159.

Purification of Antibodies in Type I Antipneumococcus Serum, and Chemical Nature of Type Specific Precipitin Reaction. B. F. Chow and W. F. Goebel, New York.—p. 179.

Pathogenic Organisms of the Genus Listerella. C. V. Seastone, Princeton, N. J.—p. 203.

Influence of Latent Syphilitic Infection on Reaction of Rabbit to Brown-Pearce Tumor. P. D. Rosahn, New York.—p. 213.

Spreading Property of Azoproteins in Dermis. A. Claude, New York.—p. 229.

*Isolation of Poliomyelitis Virus from Nasopharynx. J. R. Paul, J. D. Trask, New Haven, Conn., and L. T. Webster, New York.—p. 245.

Studies on Mechanism of Production of Specific Bacterial Enzyme Which Decomposes Capsular Polysaccharide of Type III Pneumococcus. R. Dubos, New York.—p. 259.

Use of Graded Collodion Membranes for Concentration of Bacterial Enzyme Capable of Decomposing Capsular Polysaccharide of Type III Pneumococcus. R. Dubos and J. H. Bauer, New York.—p. 271.

Serologic Relationship Between Pneumococcus Type I and Encapsulated Strain of Escherichia Coli. L. A. Barnes and Eleanor C. Wight, Boston.—p. 281.

Reaction of Rheumatic Subjects to Epidemic Infection with Hemolytic Streptococcus.—Coburn and Pauli state that of seven children who escaped an epidemic streptococcus infection none developed rheumatic symptoms and that of seventeen children who contracted the epidemic streptococcus infection fourteen developed acute rheumatism and three showed no recognizable rheumatic manifestations. The seven children who failed to contract infection with Streptococcus haemolyticus showed clearly that susceptible individuals may live in close association with an epidemic of acute rheumatism, develop no rise in antistreptolysin titer and maintain excellent health. A patient having congenital heart disease demonstrated that a nonrheumatic subject may be infected with a highly effective strain of hemolytic streptococcus and develop a typical antibody response yet escape all rheumatic manifestations. The two patients who, although infected with the epidemic strain, failed to show any antibody response, also failed to develop rheumatic recrudescences. Environmental, dietary, age and the other factors investigated did not appear to be significant in this outbreak of acute rheumatism. Three factors appeared to determine the development of the fourteen recrudescences: (1) infection with a highly effective agent; (2) the disease pattern, peculiar to each rheumatic subject, and (3) the intensity of the immune response of the patient as indicated by the rise in antistreptolysin titer.

Isolation of Poliomyelitis Virus from Nasopharynx.—Paul and his associates discuss a single example of mild illness diagnosed as a suspected abortive poliomyelitis, in which the virus of poliomyelitis was recovered from the nasopharynx by three different methods. Failure to recover virus from a total of twenty-six cases diagnosed as suspected or abortive poliomyelitis and fourteen contacts is reported. The original material from the nasopharynx of the positive case proved unusually infective for the monkey, apparently even more so than are the majority of suspensions of spinal cords from fatal human cases of poliomyelitis. An explanation of this fact is not clear. The method of isolating human virus from the throat, by means of preserving the sediment of washings from this site in glycerin, has been shown to be efficient in one case for a period of 101 days.

Laryngoscope, St. Louis

45: 573-656 (Aug.) 1935

Function of Central Acoustic Nuclei Examined by Means of Acoustic Reflexes. R. Lorente de Nó, St. Louis.—p. 573.

Treatment of Brain Abscess. P. G. Flothow, Seattle.—p. 596.

Iontophoresis in Hay Fever and Allergic Conditions. L. D. Volk, Brooklyn.—p. 607.

Response of Allergic Phenomena to Ionization. A. M. Alden, St. Louis.—p. 620.

Development of Bronchoscopic Service: Report of Thirty Cases of Endoscopy for Foreign Bodies. M. S. Lloyd, New York.—p. 633.

Ohio State Medical Journal, Columbus

31: 561-640 (Aug.) 1935

Recent Advances in Treatment of Peripheral Vascular Diseases. M. R. Reid, Cincinnati.—p. 577.

Hypochromic Anemia. R. L. Haden, Cleveland.—p. 583.

Chronic Nasal Sinusitis: Evaluation of Opaque Oils in Diagnosis and Treatment: Some Surgical Observations and Results. H. M. Goodyear, Cincinnati.—p. 591.

Our Responsibility to the New-Born. S. H. Ashmun, Dayton.—p. 594.

Differential Diagnosis of Schizophrenia and Schizophrenic Reaction Types. J. F. Bateman, Cincinnati.—p. 595.

Patent Ductus Arteriosus: Case Report of Woman Sixty-Five Years, Eleven and One-Half Months of Age. J. G. Brody and A. Randell, Youngstown.—p. 599.

Texas State Journal of Medicine, Fort Worth

31: 251-306 (Aug.) 1935

The Senile Diabetic. F. H. Kilgore, Houston.—p. 258.

Elective and Selective Induction of Labor. F. J. Iiams, Houston.—p. 262.

Practical Control of Diabetic Individual. E. M. McPeak and S. Schwartzburg, San Antonio.—p. 266.

Fractures of the Os Calcis. C. C. Green, Houston.—p. 270.

Mycotic Infections in Otolaryngology. W. D. Gill, San Antonio.—p. 272.

Tumors of Spinal Cord. S. D. Swope, El Paso.—p. 278.

External Deformities of Nose and Their Correction. S. Israel, Houston.—p. 281.

*New Concept in Treatment of Acute General Peritonitis. T. R. Sealy, Santa Ana.—p. 284.

Hypothyroidism in Pregnancy: Further Study. C. F. Brown and Genevieve C. Shea, Dallas.—p. 287.

Dietometabolic Urology. P. R. Stalnaker, Houston.—p. 292.

Treatment of General Peritonitis.—The symptoms that Sealy interprets to indicate the presence of acute general peritonitis are: When it occurs postoperatively, early appearance marked by severe diffuse pain with maximal intensity about the umbilicus; splinting of the abdominal muscles, with resultant thoracic respiration, because of retraction of the abdominal wall with boardlike rigidity; tenderness, usually very acute, which may be general or local; leukocytosis of from 16,000 to 22,000, together with a high proportion of polymorphonuclear cells, ranging from 84 to 92 per cent. He considers this high percentage of polymorphonuclears of more diagnostic importance than the leukocytosis. His concept of the most effective treatment of acute general peritonitis, after removal of the source of infection and providing ample drainage, is to get the patient's intestine to function. By such measures he believes the prognosis will be more favorable, because toxemia is the chief cause of death and comes not only from the original source of infection but also from the absorption of toxic substances from the intestine above an obstruction and from the inflamed peritoneum. Therefore it is necessary, in the treatment of acute general peritonitis, to prevent or relieve obstruction. Other causes of death are dehydration, starvation and lethal deficiency of sodium and chlorides in the body. His plan of combat entails the removal of the source of infection, the relief of intestinal stagnation and distention, the establishment and maintenance of fluid balance

with sodium and chloride solutions, nourishment, the maintenance of a persistent rhythmic peristalsis, the relief of pain and the increase of the defensive powers of the patient.

Virginia Medical Monthly, Richmond

62: 243-302 (Aug.) 1935

Serodiagnosis of Enteric Fever, with Especial Reference to Method of Qualitative Receptor Analysis. S. R. Damon, Baltimore.—p. 244.
Surgical Treatment of One Hundred and Eighty-Three Consecutive Thyroid Cases with No Mortality. G. W. Horsley, Richmond.—p. 249.
Obstetric Shock. M. P. Rucker, Richmond.—p. 254.
Significance of Cooperative Clinical Studies in Treatment of Syphilis. R. A. Vonderlehr, Washington, D. C.—p. 262.
*Carcinogenesis: Line of Research (Second Paper): Rôle of Lymphatic System in Its Relation to Karyokinesis. M. Benmosche and J. Coull, New York.—p. 268.
Venous Pressure and Body Weight Determinations in Congestive Heart Failure. J. E. Wood Jr., G. D. Capaccio and W. Weaver, University.—p. 271.
Gas Bacillus Infections: Study of Incidence, Treatment and Mortality. H. J. Warthen, Richmond.—p. 276.
Colles' Fracture. M. H. Todd, Norfolk.—p. 282.
Value of X-Ray Examinations in Industrial Surgery. J. T. McKinney, Roanoke.—p. 285.

Carcinogenesis.—Benmosche and Coull believe that the stimulus to cellular division is due to weak radiations of low energy density from the element potassium or, more exactly, its isotope K_{40}. Of all the elements that enter the body in appreciable amounts, potassium is the only one known to be radioactive. It is their contention that this radioactive element is essential for the life processes of a cell. The life in a cell may be visioned as a delicately balanced equilibrium between highly complex molecules, tending to break down into inert substances, and radiation of the proper wavelength and density. Radiation plus inert colloidal complexes equals living matter. There is a very narrow range or wave band of radiation as well as a sharply defined radiation density which is necessary to sustain cellular life. Beyond this it is impossible to go without producing death on the one hand or cellular division on the other. An increase in the concentration of the radioactive isotope of potassium will, in terms of the authors' theory, be mainly responsible for cellular division, because the radiant energy content or density has arisen above that which is necessary for its environmental function as a cell unit. If lymph stasis is the histologic picture of all precancerous states, they consider the process through which this takes place: 1. A tissue is subjected to the chronic irritation of any given carcinogenic agent. 2. A persistent inflammatory condition supervenes in which the blood supply to the part is increased with a corresponding increase in the volume of lymph bathing the tissues. 3. The persistent exudate gives rise to the increased presence of fibroblasts. Fibrosis, added to the mechanical pressure of the exudate, produces an occlusion of the afferent lymph channels, and the condition of lymph stasis is the result. This fibrosis may extend to the blood vessels supplying the part, in which case there may be an apparent anemia instead of the more frequent congestion accompanying a neoplasm. 4. The lymph node system finds itself inadequate to cope with the type and continuance of the irritation. 5. The growth hormones of the higher ductless glands are hyperstimulated. 6. The inhibitory calcium is crowded out of the scene. 7. The cells and all subsequent generations of cells are reconditioned with respect to their selectivity for K_{40}. 8. Instability and disorganization follow.

Wisconsin Medical Journal, Madison

34: 517-600 (Aug.) 1935

Peptic Ulcer. F. G. Connell, Oshkosh.—p. 527.
Cause of Peptic Ulcer. D. J. Twohig, Fond du Lac.—p. 530.
Sedimentation Rate in General Practice. J. A. Schindler and W. B. Gnagi Jr., Monroe.—p. 531.
Diseases of Cervix Uteri. C. H. Davis, Milwaukee.—p. 536.
Antivirus Treatment of Ulcerative Colitis. E. J. Oesterlin, Springfield, Ohio; A. W. Johnson, J. Kinsey, Milwaukee, and T. Willett, West Allis.—p. 538.
The Treatment of the Patient Who Has Heart Failure. L. M. Warfield, Milwaukee.—p. 546.
Early Spondylolisthesis: Case Report. R. M. Carter, Green Bay.—p. 552.
Surgical Treatment in Pulmonary Tuberculosis at the Wisconsin State Sanatorium. R. D. Thompson, E. K. Steinkopff, K. G. Bulley and C. M. Yoran, Statesan.—p. 553.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

19: 433-480 (Aug.) 1935

Vitreous Body and Glaucoma. S. Duke-Elder and H. Davson.—p. 433.
Some Remarks on Recession Operation for Squint. J. G. Milner.—p. 448.
Experiences with Glaucosan. C. Hamburger.—p. 455.
Knife for Corneal Grafting. H. B. Stallard.—p. 459.

British Medical Journal, London

2: 195-242 (Aug. 3) 1935

Nutritional Iron-Deficiency Anemia, with Especial Reference to Prevalence and Age and Sex Incidence. L. S. P. Davidson, H. W. Fullerton and R. M. Campbell.—p. 195.
Thyroid Gland and Heart Disease. O. Brenner.—p. 199.
*Results of Antenatal Administration of Quinine. P. J. Ganner.—p. 205.
Further Experience of Use of Quinine in Normal Labor. D. A. Mitchell and H. N. Bradbrooke.—p. 206.
Physiology of Deep-Sea Diving. W. A. R. Thomson.—p. 208.

Results of Antepartum Administration of Quinine.—From his observations of fifty consecutive normal primiparas with controls, Ganner believes that: 1. The tendency to onset of premature labor is, if anything, diminished by the antepartum administration of quinine. 2. The first and second stages of labor are accelerated without damage to the mother or the child. Inertia is not entirely abolished. 3. The absence of cases of retained placenta or severe postpartum hemorrhage in both series makes it impossible to decide whether the incidence of these conditions is reduced or not. Bearing in mind the increased activity of the uterine muscle during the first and second stages of labor, one would expect a similar increase during the third stage. 4. There is no evidence of any direct influence on involution and the puerperium. The results suggest that the uterine action is strengthened by giving small doses of quinine during the last month of pregnancy. If this fact is accepted, the method is surely to be recommended as a routine for use in normal, and especially in abnormal, cases, for there are few if any conditions in obstetrics in which good uterine contractions are not a valuable factor. A method that helps to secure these and is simple and safe enough for use in domestic practice appears to the author to deserve more attention than it has had up to the present time.

Indian Medical Gazette, Calcutta

70: 361-420 (July) 1935

*Arterial versus Venous Blood Sugar: Arteriovenous Sugar Difference as Criterion of Severity of Diabetes. J. P. Bose.—p. 361.
Tebetren in Indian Strains of Malaria. R. N. Chopra, B. Sen and S. K. Ganguli.—p. 362.
Treatment of Obstruction of Lacrimal Duct and Chronic Dacryocystitis. J. Hansraj.—p. 366.
Rate of Development of Hookworm Eggs. P. A. Maplestone.—p. 368.
Ewing's Sarcoma: Clinical and Pathologic Study of Case. A. N. Goyle, A. Vasudevan and K. G. Krishnaswamy.—p. 371.
Calcinosis Cutis. R. N. Chopra and J. P. Bose.—p. 375.
Evipan Sodium (Intravenous Anesthetic). P. N. Banerjee.—p. 380.
Relative Vitamin C Values of Milk and Curd: Note. A. R. Ghosh and B. C. Guha.—p. 382.
Vitamin B_1 Values, B_2 Values and C Values of Country Liquor Prepared from the Date: Note. H. G. Biswas and B. C. Guha.—p. 382.
Report on Plague in Peermade (Travancore State). N. K. Tampi.—p. 383.

Arterial versus Venous Blood Sugar.—Bose believes that the magnitude of the difference between the sugar content of the arterial blood and the venous (positive arteriovenous difference) after dextrose ingestion is the best indication of the rate of dextrose utilization in the tissues. In diabetes the power of dextrose utilization in the tissues is defective according to the degree of the severity of the disease. That explains why the degree of positive arteriovenous difference becomes less and less as the severity of the disease increases and, in the severe cases, even a negative arteriovenous difference is obtained; i. e., the venous sugar level rises higher than the arterial sugar. The reason for this is probably that there are times when the tissues are discharging more sugar into the venous blood than they are receiving from the capillary blood. The tissues lose the power of retaining the sugar that is stored in them and under the stress of the sudden flooding by extra sugar brought

to them by the arterial blood, after a dextrose meal, not only let it flow through without change but actually give up to the venous blood a little or a good deal of the sugar retained by them. This explanation receives some corroboration from the results of some of the experiments that the author is carrying out at present; viz., the action of insulin on the arteriovenous sugar difference in normal and diabetic subjects. It has been found, for example, that insulin not only helps the tissues to retain the sugar stored in them but often gives its aid in abstracting some of the sugar from the arterial blood, thus converting a negative arteriovenous difference into a positive one.

Lancet, London

2: 233-286 (Aug. 3) 1935

Infection and Its Control in Children's Wards. E. H. R. Harries.—p. 233.
Dermatitis from Dyed Hair, Furs and Fabrics. J. T. Ingram.—p. 239.
Proctalgia Fugax: Little Known Form of Pain in Rectum. T. E. H. Thaysen.—p. 243.
*Treatment of Tetanus with Continuous Avertin Anesthesia: Report of Case. L. Cole.—p. 246.

Treatment of Tetanus with Tribrom-Ethanol Anesthesia.—Cole has used tribrom-ethanol in ten cases of tetanus. In severe cases, doses of 0.1 cc. per kilogram of weight control the reflex spasms completely for periods of from two to six hours and produce relaxation of the jaw and lessening of the tonic rigidity. No ill effects have followed this dose given daily for eight consecutive days, and four such doses in twenty-four hours have not given rise to ill effects. In the author's present case tribrom-ethanol produced complete control of the reflex spasms, relaxation of the jaw and lessening of the tonic rigidity about ten minutes after it had been given. Such relief was maintained for from four to eight hours according to the dose (from 0.2 to 0.5 cc.) given. The only ill effect which appeared to be directly due to the tribrom-ethanol was that on the respirations, which became increasingly rapid and shallow about ten minutes after it had been given, and cyanosis came on within half an hour. The cyanosis was relieved by nasal oxygen, which had to be given more and more frequently and continuously as the illness progressed. The rectal irritation caused by the repeated doses cleared up quickly as soon as the doses were reduced in size and frequency. The curve of dosage, which was determined solely by the period of freedom from spasms after each dose, showed a steady rise to a maximum on the ninth day and then a steady fall showing that, after the first symptoms appear, it is many days before toxin produces its full effects, and that these subside only gradually. The control of the spasms was so satisfactory that a stomach tube could be passed easily by the nasal route and the child was fed hourly. The child was unable to swallow any fluid until the twenty-first day of the disease. How great is the danger of giving large and repeated doses of tribrom-ethanol is not yet known. It is possible too that large and repeated doses given for many days may lead to dangerous cumulative effects.

Medical Journal of Australia, Sydney

2: 69-100 (July 20) 1935

*Place of Surgery in Early Carcinoma of the Breast. A. Newton.—p. 69.
Place of Surgery in Treatment of Later Stages of Cancer of the Breast. B. T. Edye.—p. 72.
*Place of Deep Therapy in Carcinoma of the Breast. A. T. Nisbet.—p. 75.
Occurrence and Treatment of Metastases in Carcinoma of the Breast: Notes. T. H. Ackland.—p. 80.
Focal Factor in "Rheumatism." R. G. Brown.—p. 83.

Surgery in Early Carcinoma of the Breast.—Newton states that of a total of 1,621 patients treated surgically for early carcinoma of the breast over a period of more than ten years 984 have been traced, and of these 57 per cent of the private patients and 46 per cent of the public hospital patients were alive and well more than five years after operation. In each series 8 per cent of the deaths occurred from other causes. In certain of the individual series of cases the "five year or longer" survival rate was more than 60 per cent. The results in the operable group were naturally more satisfactory than those obtained in the borderline group. There is a marked difference in the percentage alive and well in the two series; 22 per cent in the private patients and only 14 per cent in the public hospital series. This is probably due to the inclusion of many advanced cases in the public hospital figures. A study of these two groups of cases does not support the suggestion that the 637 patients who were untraced should be regarded as dead, with a consequent lowering of the percentage survival rate. In point of fact, it indicates that the greater the percentage of untraced patients, the better is the survival percentage. Statistical investigations are of limited value, but the results of this investigation, when compared with a similar inquiry of the results of radium therapy in early cases of carcinoma of the breast, clearly show that better results are obtained by surgical removal. The situation has been summarized recently by Moran, who has pointed out the limitations of surgery and the indications for radiotherapy. Many surgeons do not yet agree with his opinion that preoperative irradiation is of value in the treatment of this disease, nor can there be general agreement with his statement that there should be more frequent removals of unhealthy breasts than at present is sanctioned by practice or sentiment. The wide dissemination of advice of this nature would lead to the unnecessary removal of many breasts afflicted with cystic mastitis, a condition that is an infrequent precursor of malignant disease. These debatable points indicate that there should be the closest cooperation between all those branches of the medical profession concerned with the use of the methods of diagnosis and treatment at present available.

High Voltage Roentgen Therapy in Carcinoma of the Breast.—Nisbet feels that, in cases of true mastitis in young women, irradiation gives satisfactory results, thus preventing surgical disfiguration. Roentgen therapy apparently does not destroy the mechanism of lactation when applied to the breast, either before or during pregnancy. A strong plea is put forward for preoperative irradiation in early carcinoma of the breast. Much further histologic and pathologic investigation seems necessary before definite conclusions can be reached as to the action of high voltage roentgen therapy on carcinomatous tissue. These results would aid the clinician in determining how far, if at all, x-rays should replace surgery. If the surgical scar is free from the thoracic wall, the risk of skin recurrences in this region is lessened. The period by statistics in regard to roentgen irradiation of mammary carcinoma is not long enough to warrant any conclusions being drawn. In the preparation of statistics a greater amount of notice should be taken of the age of the patient. It is in the young that carcinoma of the breast is most devastating, while in the old the possibility of cure is much greater. Mammary carcinoma of stages 3 and 4 are benefited by roentgen therapy for some time at least, and in the aged this relief may persist for some years. A technic using modern apparatus is described and the different reactions on the skin with high voltages and increased filtration are noted. The large number of roentgen units delivered to each part is stressed, and also the fact that fibrosis of the lung does not occur. The author believes that cooperation between the surgeon, the physician and the radiotherapist is the only rational attitude and that consultations should be sought in every case.

Quarterly Journal of Medicine, Oxford

4: 203-344 (July) 1935

*Tuberculin Allergy in Acute Infectious Diseases: Study of Intracutaneous Test. J. S. Westwater.—p. 203.
*Dietetic Study of Cases of Juvenile Rheumatic Disease. E. C. Warner and F. G. Winterton, with assistance of M. L. Clark.—p. 227.
Observations on Therapeutic Use of Iodides. W. R. Snodgrass.—p. 247.
Plasma Proteins and Nonprotein Nitrogen, and Sedimentation Rate, in Chronic Rheumatic Disorders. G. R. P. Aldred-Brown and J. M. H. Munro.—p. 269.
Comparison of Various Diets in Treatment of Diabetes Mellitus. E. M. Watson and Marion A. Wharton.—p. 277.
*Treatment of Tetanus, with Observations on Fate of Injected Antitoxin. L. Cole and E. T. C. Spooner.—p. 295.
Incidence of Intrathoracic Neoplasia in Teaching Hospitals of Great Britain 1894-1928. R. D. Passey and J. M. Holmes.—p. 321.

Tuberculin Allergy in Acute Infectious Diseases.—Westwater studied some 2,000 cases of the acute infectious diseases, including measles, scarlet fever, chickenpox, diphtheria and whooping cough. The method adopted was to perform

intradermal tests on admission and thereafter at intervals varying in each disease until the patient left the hospital. Measles and scarlet fever appear to cause a temporary depression of tuberculin sensitivity as determined by the intracutaneous tuberculin test. In about half the cases the response to the Mantoux test in 1 : 1,000 dilution was completely suppressed following the onset of the acute infection. In measles the use of the stronger 1 : 100 dilution was not sufficient to counteract the effect of the exanthem. This period of depressed allergy or hyposensitivity usually lasts for a week from the appearance of the rash but may persist into the second week. To avoid the possibility of a fallacious negative result in the clinical use of the Mantoux test, at least a fortnight should elapse from the onset of measles and scarlet fever before a test is done. Chickenpox, diphtheria and whooping cough could not be shown to have any appreciable effect on tuberculin sensitivity. Allergic subjects failed to respond to their initial intracutaneous test. It is recognized that the small amount of tuberculin introduced by an intradermal test can stimulate allergy as shown by an increased response to a subsequent test. Probably the same phenomenon occurs in those cases in which an initial test, although negative, is followed by a positive response to the same dilution of tuberculin when the test is repeated a week or two later. Apparently the individual's sensitivity has required the stimulation of a minute dose of tuberculin in order to rise above the reaction threshold of that particular dilution. This illustrates the importance of repeated tests before a negative result to a given dilution can be accepted for diagnostic purposes. In measles and scarlet fever the depression of sensitivity appears to be due to the action of the rash on the skin itself. The maximal effect is found to follow on the period when the rash is at its height. There is a direct relation between the extent to which sensitivity is depressed and the intensity of the rash. The results of the study of the intracutaneous test favor the view of Rolly that the effect is not a specific one but is due to local effects of the exanthems on the skin. It may be said that whichever reaches the skin first —the tuberculin or the measles toxin—will produce its characteristic response. Once the rash is established, the result of a tuberculin test depends on the two opposing factors, the intensity of the rash and the degree of sensitivity possessed by the subject.

Dietetic Study of Juvenile Rheumatic Disease.—The investigations of Warner and Winterton do not show that any one factor can be incriminated as a contributory cause for rheumatism occurring in certain families and certain children. It does appear, however, that the consumption of animal protein and of dairy products by the rheumatic children and by the control children of this social status is low and that the intake of carbohydrate, particularly in the form of potatoes, is high. They have tried the effect of adding extra vitamin A and vitamin D in the form of viosterol as a prophylactic agent; as this was of little value, it does not appear that the imbalance of fats and carbohydrates was working through these agents.

Treatment of Tetanus.—Cole and Spooner discuss the treatment of tetanus and give the results obtained in twenty-one cases. The rate of disappearance of injected antitoxin has been investigated in four cases after the injection of a single dose of 200,000 units intravenously. It is shown that antitoxin disappears from the blood of these patients rapidly at first and more slowly later, and that seven days after the injection about 10 units per cubic centimeter and at the end of fourteen days between 3 and 5 units per cubic centimeter remained. They suggest that routine treatment should include a single dose of 200,000 units of antitoxin given intravenously as early as possible, followed after an interval by thorough treatment of the wound. As liberal a diet as possible should be given and an attempt made to give more than 2,000 calories daily. The value of tribrom-ethanol in controlling the spasms and giving sleep is emphasized. The effects of treatment of three cases with a moderately "lissive" sample of curare, that is, a sample that removes pathologic rigidity in man without causing diminution of voluntary power, are described and the possibilities of this treatment are discussed. The prognosis is considered in relation to the incubation period and the period of onset. These two factors should be given greater consideration in assessing results and in choosing cases for any new method of treatment, such as curare.

Archives Méd.-Chir. de l'App. Respiratoire, Paris

10: 261-332 (No. 4) 1935

Malignant Lymphogranulomatosis of Thoracic Form: Two Cases. P. Nobécourt, M. Kaplan and P. Ducas.—p. 261.
*Pseudotuberculous Forms of Malignant Lymphogranulomatosis. I. Goia, L. Daniello and M. Hanganutz.—p. 283.
Miliary Carcinomatosis of Lung. Amsler, Leonet and Sourice.—p. 297.
Iodized Poppy Seed Oil Bronchography by Intranasal Route. G. Hicguet.—p. 304.

Pseudotuberculous Malignant Lymphogranulomatosis.—Goia and his co-workers studied the differential diagnosis of pulmonary lymphogranulomatosis and tuberculosis. The roentgenologic appearance of the pulmonary lesions is the most important. Although usually the parenchymatous lesions produced by lymphogranuloma are not characteristic and may perfectly imitate those of tuberculosis, certain roentgenologic details may suggest the former. These are the constancy of the mediastinal lesions and the almost similar constancy of peribronchovesicular lymphangitis. The latter may sometimes have the appearance of tuberculosis, but the opaque peribronchial adhesions are usually larger, are more rounded and resemble cancerous lymphangitis. The pleural changes that are always present may be similarly considered an expression of lymphatic spread. An important criterion of differentiation that can be used in favor of malignant granulomatosis is the prompt regression of the ganglional and pulmonary lesions after treatment by roentgen rays. It should be noted that not only the granulomatous tissue but also the perifocal congestive reactions regress. In general, the disharmony between the clinical symptoms and the roentgenologic picture is also important. The two conditions are frequently combined in such a manner that this fact can be determined only by eventual histologic study.

Presse Médicale, Paris

43: 1193-1216 (July 27) 1935

Form of Habitual Headache of Students. A.-B. Marfan.—p. 1193.
*Treatment of Gastroduodenal Ulcer by Histidine. E. Aron.—p. 1195.
Clinical Study of Functional State of Liver by Hepatic Puncture. E. Frola.—p. 1198.

Histidine in Gastric Ulcer.—Aron gave daily subcutaneous injections of 1 cc. of a 4 per cent solution of histidine hydrochloride to dogs that had been operated on to produce unusual atrophy of the gastrojejunal mucosa. The effects were so good that he decided to try a similar procedure in human ulcers. Thus 5 cc. of the same solution was given daily for three weeks to patients suffering from ulcer—a total of 4 Gm. of histidine for each patient. In the majority of cases the improvement was manifested rapidly, usually between the fifth and tenth injections. The treatment was always begun during a period of painful crisis and the good results corresponded to a complete disappearance of the pain, burning, vomiting, and so on, during the first two weeks. Mediocre results were recorded when symptoms remained, even though there was marked improvement. Failure was noted when the patients received no immediate relief from the treatment. Of the forty-two patients with ulcer in various locations, thirty-seven obtained good and two mediocre results, and there were three failures.

Policlinico, Rome

42: 1671-1718 (Aug. 26) 1935. Practical Section

*Mixed Forms of Dysentery Caused by Endamoeba Coli and Blastocystis Jalinus and by Blastocystis Jalinus and Trichomonas Intestinalis. A. M. Cicchitto.—p. 1671.
Thymic Death Following Application of Gag: Case. A. Caribotti.—p. 1679.
Modern Methods Used in Treatment of Tuberculous Hemoptysis. L. Capaldo.—p. 1683.

Mixed Forms of Dysentery.—Cicchitto reviews the literature on the pathogenicity of Endamoeba coli, Blastocystis jalinus and Trichomonas hominis and states that certain mixed forms of dysentery, caused by the association of Endamoeba coli and Blastocystis jalinus (Perroncito), on the one hand, and by that of Blastocystic jalinus and Trichomonas hominis, on the other, are frequent in persons living in tropical countries. The author emphasizes the importance of these two forms of intestinal parasitism, the clinical picture of which is so similar to that of intestinal amebiasis that a differential diagnosis between the three forms of infestation is difficult. He states that both Endamoeba coli and Trichomonas hominis are pathogenic organisms. Blastocystis jalinus, which when existing by itself in

the intestinal tract of man is a nonpathogenic form, becomes pathogenic as soon as it is associated with certain forms of parasites and increases the pathogenicity of the parasites. The conclusions of the author are based on the clinical observation of sixteen cases of mixed Endamoeba coli and Blastocystis jalinus infestation and twenty-five cases of mixed Blastocystis jalinus and Trichomonas hominis infestation, in all of which coprologic examinations were repeatedly performed.

Semana Médica, Buenos Aires

42: 445-520 (Aug. 15) 1935. Partial Index

Interruption of Pregnancy Incompatible with Viability of Fetus. E. A. Boero.—p. 445.
*Associated Undulant Fever and Acute Miliary Tuberculosis: Case. P. P. Piñero García and F. R. Ruiz.—p. 451.
Nasal Catheterization: Applications. T. Martini and R. E. Curutchet. —p. 462.
Clinical Beginning of Pulmonary Tuberculosis in Adults. O. P. Aguilar. —p. 467.
Intercostal Herpes Zoster with Spinal Symptoms: Case. O. Luque and R. Pucheta Morcillo.—p. 485.
Paralysis of Associated Horizontal Movements of Eyes in Posterior Cerebral Syndrome: Cases. R. Orlando.—p. 491.
Colorimetric Method for Determination of Urea in Blood, Cerebrospinal Fluid and Tissues. J. A. Sánchez.—p. 503.

Undulant Fever and Acute Miliary Tuberculosis.—Piñero García and Ruiz say that, because of the frequency of undulant fever and tuberculosis in Argentina and of their possible association, it is advisable to perform the laboratory tests for both infections in order to make an early diagnosis in cases of combined etiology. Undulant fever, like any grave infection, when in patients with latent tuberculosis, excites the virulence of the tubercle bacilli and tuberculosis enters a period of more or less activity. The similarity of the clinical picture of undulant fever of the pulmonary form and of pulmonary tuberculosis makes the differential diagnosis difficult. As a rule, in cases of undulant fever of the pulmonary form the clinical pictures and the roentgenograms do not agree; while the former indicate the presence of infiltration and ulceration of the pulmonary parenchyma, the latter fail to show the lesions. The early diagnosis of the associated forms is made only by the positive results of the Wright and Huddleson tests for undulant fever and of the inoculation of the sputum, pleural exudates or similar material from the patient into guinea-pigs. The author's is the second case of associated etiology reported in Argentina. The patient, aged 21, was a slaughterer with latent tuberculosis which, because of the presence of undulant fever of the pleural form (serofibrinous pleurisy with large effusion), developed into acute miliary tuberculosis.

Archiv für klinische Chirurgie, Berlin

182: 299-458 (July 23) 1935. Partial Index

*Studies on Heredity of Harelip and Cleft Palate, with Especial Consideration of Mode of Transmission. C. H. Schröder.—p. 299.
Surgical Treatment of New Bone Fractures. F. Bode.—p. 331.
Technic of Arrest of Hemorrhage in Region of Soft Parts of Head. B. Schlesinger.—p. 369.
*Surgical Case of Cerebral Schistosomiasis. K. Shimidzu.—p. 401.
Osteopsathyrosis. H. Fuss.—p. 425.
*Pathogenesis of Necrosis of Gallbladder and of Pancreas (Experiments and Clinical Aspects). J. Hofhauser.—p. 443.

Heredity of Harelip and Cleft Palate.—According to Schröder there is evidence that the cleft formations in lip and palate are caused by a hereditary germinal factor. He maintains that external factors that exert their influence during the embryonal development are not of decisive significance for the development of the cleft formations. Amnionic remnants, observed in the cleft in rare cases, are the secondary result and not the primary cause of the cleft formation. The percentage of heredity in the families of seventy-five persons with clefts was 42.7, and in an additional 5.3 per cent parental consanguinity could be proved. The transmission was recessive in 75 per cent of the cases and dominant in 25 per cent. The children of the persons with cleft formations were found to be affected in 40.5 per cent of the cases. More than one third of the children of externally healthy parents whose family history disclosed the defect had cleft formations. Among the persons with cleft formations who came from families without demonstrable traces of the defect the incidence of the disorder was 22 per cent. In view of the one-sided selection these figures are rather high, but they permit conclusions regarding the prospects of defective offspring of persons who are affected themselves or who have a family history of the defect. The author observed a much higher incidence in men than in women: of 225 patients with this defect, 64.3 per cent were men. The cleft was twice as frequent on the left as on the right side. There were also other deformities in the patients as well as in the members of their families. In some families there seemed to be a tendency to other cleft formations (rachischisis, coloboma iridis and so on). The records about cleft formations in seventeen pairs of uniovular twins disclose that there were four pairs with discordance. This indicates a phenotypical variability, the incidence of which, however, does not exceed a certain limit. The hypothesis formulated by Just, to the effect that the transmission of the slight cleft formations is generally dominant, while that of the severe ones is usually recessive, could be corroborated by the author on the basis of thirty-two genealogical trees. This also corroborates the assumption of a multiple allelomorphism. The author maintains that harelip and cleft palate have been increasing in recent decades. He thinks that this is due to the fact that surgical repair of the defects tends to counteract natural selection, and he recommends eugenic measures to avoid a further increase.

Surgical Case of Cerebral Schistosomiasis.—Shimidzu reports the history of a patient who had symptoms indicating cerebral tumor. Trepanation was done and a hardened area was detected. It was possible to remove nearly all the hardened tissue. Following the operation, the symptoms of cerebral pressure disappeared and the patient is now able to work again. The operative specimen had a sandy feeling and the microscopic examination disclosed that the granules contained numerous ova. Schistosoma cercariae must have entered a cerebral sinus, developed there and deposited ova in the veins of the occipital lobe. Visual defects and signs of cerebral pressure were the result. The author points out that a similar case was observed by another author, but in that instance ova were also detected in the lung, and it was assumed that the ova reached the brain by embolism; however, in the case reported here, pulmonary symptoms were absent. Another author reports that in animals the parasites have been known to occur in the vena cava or in the right side of the heart and from there to reach the brain by way of the jugular vein.

Necrosis of Gallbladder and of Pancreas.—Hofhauser made a comparison between necrosis of the gallbladder and necrosis of the pancreas. He found that the anamnesis, the clinical manifestations (with the exception of the site of origin of the pains) and the histologic aspects are identical. There is a difference in the character of the peritonitis. In necrosis of the gallbladder the bile fluid in the abdominal cavity directs the attention at once to the gallbladder. Focal fat necrosis, which indicates ferment action, may occur in necrosis of the gallbladder as well as in necrosis of the pancreas, but in the more extensive form it occurs almost exclusively in pancreatic necrosis. The treatment of the two conditions differs: conservatism is advisable in pancreatic necrosis, whereas surgical intervention should be resorted to in simple necrosis of the gallbladder. At the bedside, the differentiation of the two conditions is extremely difficult. In view of the great similarity of the two processes, the author advances the opinion that identical factors play a part in their pathogenesis. He thinks that simple necrosis of the gallbladder is due to the tissue impairing action of the bile that has been changed by hyperresorption and hypersecretion. In the pathogenesis of necrosis of the pancreas he ascribes the greatest significance to the peculiar, enzyme-like action of the bile that has been altered by the abnormal function of the gallbladder. The canalicular theory of the pathogenesis of necrosis of the pancreas is disproved by the observation that in dogs the active pancreas can be implanted in the gallbladder without necrosis or even a digestive disturbance developing. It was possible to demonstrate in various experiments the tissue impairing or toxic action of even the normal bile; and the bile that has undergone changes as the result of dysfunction of the gallbladder has an even greater toxic action. The significance of the function of the gallbladder is indicated by the hitherto disregarded factor that pancreatic necrosis does not occur in patients who have undergone cholecystectomy. This

is almost as evident as that there is no necrosis of the gallbladder after cholecystectomy. The dysfunction of the gallbladder plays the most important part in the classic necrosis of the pancreas. To be sure, inflammation of the pancreas may develop and the necrosis that develops then is gangrenous pancreatitis. The difference between the two forms of pancreatic necrosis lies in the etiology. The author gained the impression that the most acute form of pancreatic necrosis develops in persons with gallstones, in whom the gallstones cause neither difficulties nor a change in the wall of the gallbladder.

Archiv für Verdauungs-Krankheiten, Berlin

58: 1-120 (Aug.) 1935

*Guiding Principles of Simple and Rational Treatment of Diabetes Mellitus. R. Meier and W. von Drigalski.—p. 1.
*Gross Hemorrhage of Stomach. P. de la Viesca.—p. 22.
Gastric Mucus. F. Baltzer.—p. 33.
Congenital Idiopathic Pylorostenosis in Adults. L. Frank.—p. 38.

Treatment of Diabetes Mellitus.—On the basis of a large material, Meier and von Drigalski discuss the principles of the rational treatment of diabetes mellitus. They differentiate two phases in the metabolic process of diabetic patients. The first phase is that of decompensation. This exists in all diabetic patients not yet adequately adjusted. The metabolic condition during this phase is characterized by the insufficiency of the islands toward the food intake and by a number of somatic and psychic factors that the patient encounters in his social, occupational and private life. As the patient enters clinical treatment, the latter factors are largely eliminated. Without any other measures except the adherence to a diet, the glycosuria becomes reduced, the acidosis may disappear entirely and the blood sugar decreases. The phase of decompensation persists as long as the improvement in the metabolic condition continues. It varies in length, lasting perhaps five or six days or from ten to twelve days, and it may be entirely absent. In cases in which the glycosuria does not disappear there remains a rather constant sugar elimination, which stands in contrast to the sudden changes in glycosuria noticeable during the phase of decompensation. This rest glycosuria corresponds to true insular insufficiency. It does not become evident until after the extrainsular factors that tax the metabolism have been eliminated. Blood sugar and acidosis often show an analogous behavior. This second phase permits the determination of the tolerance and it makes adjustment of the treatment possible with or without insulin. The authors demonstrate in numerous cases how the metabolic condition may be improved without doing more than awaiting the disappearance of the phase of decompensation, while the patient receives a correctly selected diet that is as regular as possible. Insulin should be avoided during the first phase, or it should be given in subthreshold values. The definite insulin dosage is not decided on until after the degree of insular insufficiency has been determined, which is not possible until the second phase has been reached. The diet differs likewise during the two phases. The authors found it advantageous to arrange the dietetic treatment in three forms. The first form is a low caloric diet that is deficient in protein and fat and contains an amount of carbohydrates sufficient for the permanent treatment. The first form is given during the phase of decompensation. It presents the framework which, by the addition of fats, is changed to the second form and by the further addition of protein to the third form or permanent diet.

Gross Hemorrhage of Stomach.—De la Viesca discusses gross bleeding of the stomach on the basis of 177 cases that were observed at the clinic in Leipzig. He found that gross gastric hemorrhage was caused in the majority of cases (73.45 per cent) by gastro-intestinal ulcers; then followed in the order of their frequency those caused by gastric carcinoma (13.56 per cent) and by gastritis (10.16 per cent). Gross bleeding was more frequent in gastric ulcer than in ulcers of the duodenum. Gross hemorrhage was the first symptom in some cases of peptic ulcer, but in the majority the symptoms had existed for three years or more. Whereas hematemesis was more frequent in gastric ulcer, melena showed a higher incidence in duodenal ulcer. Gross hemorrhage of the stomach influenced the blood status and the blood pressure. It was followed by a secondary anemia with reduction in the hemoglobin content as well as in the number of erythrocytes, and the blood pressure decreased by from 20 to 50 mm. of mercury. Quite frequently there was an increase in temperature after gross bleeding of the stomach, but it usually subsided rapidly. The high incidence of hyperacidity (90 per cent) was especially noteworthy in the gross bleeding caused by ulcer. A repetition of the bleeding was observed in 8.4 per cent of the ulcer cases. More than 27 per cent of these patients died, which indicates an unfavorable prognosis for cases with recurrent gross bleeding. Blood tests in the stool indicated that the hemorrhage lasted from fifteen to twenty days. There was a higher incidence of bleeding ulcers in women than in men. The mortality of gross bleeding in cases of ulcer was 6.7 per cent. It was higher in men than in women. The prognostic significance of the age of a patient was proved by the fact that 12 per cent of the patients more than 40 years of age died, whereas 1.5 per cent of younger patients died. In cases of gastric carcinoma, gross bleeding occurred in 5.59 per cent of the cases and the mortality rate caused by the hemorrhage was 16.6 per cent. The incidence of gross bleeding in patients with gastritis was 2.35 per cent, but none of these patients died. In the treatment of gross hemorrhage the author followed the rules that are generally adhered to. Since the mortality of gross hemorrhage is comparatively low and since an exact anatomic diagnosis is but rarely possible, a surgical intervention with its rather high mortality is rarely advisable. He considers an operation during hemorrhage justified only when arrosion of an artery is suspected.

Beiträge zur klinischen Chirurgie, Berlin

162: 1-176 (July 24) 1935. Partial Index

New Type of Elbow Fracture. J. Bravo and A. Monsalve.—p. 1.
Rare Adamantinomas. W. Rieder.—p. 7.
*Significance of Antivirus of Besredka in Surgery. S. A. Klein.—p. 15.
Diagnosis of Tumors of Abdominal Walls. T. Körner.—p. 25.
Internal Incarcerations After Abdominal Operations. E. Kaufman.—p. 53.
*Problem of Spondylolysis. F. Reischauer.—p. 64.

Besredka's Antivirus in Surgery.—According to Klein, Besredka's antivirus is a substance that develops from dead and decaying bacteria in the course of the development of a bacterial bouillon culture. This substance, which in the living bacterial cell is supposedly bound to the virus, has as yet not been isolated, but it can be recognized by a number of characteristics that are antagonistic to the virus. The antivirus develops not only in a bouillon culture but also in the animal organism; namely, from the invading bacteria that were destroyed by the natural defense powers. The immunity that develops after an infection is supposedly the result of the immunizing action of the antivirus. The author discusses the preparation and the use of antivirus and then describes his studies on the surgical use of antivirus, particularly in laparotomy and in the treatment of infected wounds. He found that Besredka's antivirus exerts an immunizing and a weak antiseptic action, but type and quantity of the virus play an important part. The immunizing action of antivirus is probably the result of two factors, the activation of the protoplasm and an unknown factor that is produced by retained bacterial products. The antivirus is not specific. The author considers the use of antivirus advisable in selected surgical cases.

Spondylolysis.—Reischauer calls attention to the fact that opinions are still divided as to whether the cleft formations in the interarticular portion of the vertebrae, so-called spondylolysis, are congenital or acquired. He shows that their congenital nature, which is accepted by many, is still being denied by Meyer-Burgdorff. The author describes bilateral, symmetrical spondylolyses of the interarticular portion of the vertebrae, which were the result of zones of transformation, although there was no external clamp action of the articular processes stressed by Meyer-Burgdorff. He shows that the cleft formation takes place slowly as the result of a disproportion between supporting capacity and load. This produces zones of transformation at the critical site. A high incidence of the cleft formations has been observed in miners who did not sustain vertebral injuries. Although this may militate against the importance of the clamp action of the articular processes in lordosis, which Meyer-Burgdorff considers the chief cause of acquired cleft formation, it does not prove the congenital nature of spondyloly-

sis but rather disproves it. The author thinks congenital spondylolysis possible but concedes that there is considerable evidence that in a great number of cases it is acquired, although not necessarily in the traumatic manner. In his own material he likewise noticed a greater incidence of spondylolysis in adults whose vertebral column is exposed to heavy loads when the person is in a bent position. He thinks that further roentgenologic studies on persons with various occupations will be necessary in order to determine whether spondylolysis is more frequently congenital or acquired. Processes of transformation as the cause of acquired cleft formation must be taken into consideration in the cases in which overexertion plays a part. Such transformations may produce an "elongation" as well as a lysis of the interarticular portion. The author concludes that, if considered from this point of view, pseudospondylolisthesis and true spondylolisthesis are without doubt essentially the same, except that belief in their congenital nature makes a definite solution impossible.

Jahrbuch für Kinderheilkunde, Berlin

145: 61-116 (Aug.) 1935. Partial Index

Meaning of Parallergy. G. Bessau and H. Fernbach.—p. 61.
*So-Called Normal Lead in Human Milk. M. Kasahara and Shin-Ichi Nosu.—p. 78.
*Chronic Carbon Monoxide Poisoning in Nursling. Alice Joss-Huber.—p. 81.
Instantaneous and Late Reactions in Allergic Skin Tests. O. Tezner.—p. 86.
*Functional Disturbances of Heart Caused by Overexertion and Symptomatology of Heart Disease in Children. W. Nissen.—p. 96.

So-Called Normal Lead in Human Milk.—Kasahara and Nosu point out that other investigators have detected lead in cow's milk as well as in human milk, but, while they gave definite figures for cow's milk (0.04 mg. of lead per liter), they did not state the quantity in human milk. In order to determine the normal lead content of human milk, the authors analyzed the milk of eighty-seven women from a city in which a water service system existed, and of fifteen women from rural districts that did not have a water service system. A tabular result of these tests indicates that the milk of thirty-five of the eighty-seven city women was free from lead, while the other fifty-two had lead in their milk. The quantities varied from slight traces up to 0.18 mg. per liter. Only three of the fifteen rural women had lead in their milk (0.04 to 0.11 mg. per liter). The authors think that the presence of lead is partly due to the water service system.

Chronic Carbon Monoxide Poisoning in Nursling.—Joss-Huber relates the history of a nursling that came under her observation at the age of 10 weeks. The infant had severe anemia and clonic twitching of the left extremities and the left side of the face. The liver and spleen were enlarged and there was albuminuria. Since the clinical examinations threw no light on the origin of the disorder, carbon monoxide poisoning was considered possible in spite of a negative anamnesis. A specimen of blood was examined for the presence of carbon monoxide and a considerable quantity was detected. After this, further questioning disclosed that the bed of the nursling stood alongside a large tile stove in a comparatively small room that was rarely aired. The stove had cracks from which gas escaped, so that the adults developed headaches. At the clinic the nursling improved rapidly. Following a blood transfusion the blood status improved and after three weeks the child could be discharged as cured. The literature on chronic carbon monoxide poisoning is briefly reviewed.

Functional Disturbances of Heart Caused by Overexertion.—Nissen observed in a group of school children a large number with functional disturbances of the heart. The disorders could be traced to overexertion, for in this mountainous region the children applied themselves excessively to snow sports. On the basis of observations on 176 children, the author describes the symptomatology of the functional cardiac disorder. He gave especial attention to the accents of the first and second mitral sounds and detected a sign to which he ascribes pathognomonic significance. He found that, in all cases in which the second mitral sound at the cardiac apex has the accent, some pathologic condition exists, either a functional disturbance or an anatomic lesion.

Klinische Wochenschrift, Berlin

14: 1161-1200 (Aug. 17) 1935. Partial Index

Therapeutic Action of Pentavalent Arsenic Compounds in Late Forms of Neurosyphilis. B. Dattner.—p. 1161.
Studies on Pathogenesis of Diphtheria. M. Gundel and N. Erzin.—p. 1164.
*Angina Pectoris During Work Test. F. Kisch.—p. 1165.
Influence of Retroresorption on Iodine Elimination Curve in Blood Following Injection of Iodine Tetragnost. H. Bronner and M. J. Madlener.—p. 1170.
Incidence of Thrombo-Embolism. A. E. Sitsen.—p. 1172.
*Changes in Sense of Taste During Pregnancy. R. Hansen and W. Langer.—p. 1173.
*Infection with Paracolon Bacilli in Febrile Conditions After Measles. K. Hassmann.—p. 1177.

Angina Pectoris During Work Test.—Kisch shows that the results of former attempts to produce attacks of angina pectoris in patients with a predisposition for this disturbance make it appear probable that a deficiency of the capillarization of the myocardium is an important factor in the development of the attack of cardiac pain. Influences that produce a considerable acceleration of the heart beat in the presence of this deficiency may change a predisposition to angina pectoris to an actual attack in the presence of certain unknown factors. There are indications that the sudden increase in the cardiac frequency is the result of deviations in the reflex regulation of the circulatory system. Apparently angina pectoris is also dependent on an adequate energy reserve of the myocardium. The etiology of the cardiac pain is still unknown. The author made tests to determine the work threshold value for the cardiac pain; that is, he determined the amount of exertion necessary to produce an attack and indicated by the number of repetitions of a standard exertion (sitting up from the horizontal position and resumption of the reclining position). This work threshold value for the cardiac pain permits an objective estimation of the prophylactic or therapeutic action of measures employed to reduce the predisposition for the attacks. Although the work threshold value for the cardiac pain varies in the different patients, it is nevertheless quite constant in the same patient, so that a considerable elevation or reduction of the threshold value in the same patient may be considered the indication of a reduction or an increase in the predisposition for the attacks. The oral administration of glyceryl trinitrate or the injection of euphylline elevates the threshold for the cardiac pain; that is, they reduce the predisposition for the attack. However, the height of the threshold permits no conclusion regarding the functional capacity of the circulation.

Changes in Sense of Taste During Pregnancy.—Hansen and Langer believe that a number of disturbances that develop during pregnancy can be explained by a change in the sense of taste. They decided to study the sensitivity of the sense of taste in pregnant women by testing the four main qualities of the sense of taste, the sensitivity for salty, sour, sweet and bitter substances. They found that in pregnant women the threshold for the salty sensation is 114 per cent higher, for the sour 89 per cent higher, for the sweet 35 per cent higher and for the bitter 60 per cent higher than in normal nonpregnant women. There are relations between the sense of taste and the secretion of the gastric and salivary glands, and the authors assume that the subacidity during pregnancy can be explained, at least to a certain extent, by the reduced sensitivity of the apparatus of taste. The craving for sour substances, condiments and sweets can be traced to the reduced sensitivity for the corresponding taste qualities. The elevation of the threshold for the taste of salt can exert an influence on the sodium chloride and water exchange of the organism.

Paracolon Bacilli in Febrile Conditions After Measles.—Hassmann points out that the anergic period of measles outlasts the exanthematous period as a rule only for a short while; however, this is the period during which complications of the respiratory tract and of the ear are rather frequent. Disturbances of the digestive tract in the form of inflammation of the oral mucosa or of enterocolitis are rarer. According to von Groer, the latter group of disturbances is usually not severe; the intestinal disturbances, for which he assumes the virus of measles as the primary cause, lead to secondary infections of the intestinal tract, which may assume a dysentery-like

character. These enteral disturbances after measles are only rarely caused by an infection with typhoid or paratyphoid bacilli. The diagnosis of these disorders is difficult because measles inhibits for some time the positive outcome of the Gruber-Widal reaction, and the demonstration of the bacilli in the stool is the only proof. The author observed a number of febrile intestinal disturbances in the course of an epidemic of measles, but there were no indications for an infection with typhoid, paratyphoid, dysentery or Brucella abortus. He describes the clinical histories of two cases in which paracolon bacilli could be demonstrated. A pure culture was made of the paracolon strain detected in the first child, and the serum of the child was tested for its agglutination capacity. The Widal test could not be made until after the child had recovered, but even at this time it was still 1:160 positive, whereas the same serum did not agglutinate another paracolon strain. The author does not feel justified in implying that paracolon bacilli are the only cause of enteral disturbances that develop after infectious diseases; nevertheless he considers this condition worthy of consideration. He says that in a previous report he called attention to the etiologic significance of paracolon strains in enteral disturbances and stresses that animal experiments likewise made the etiologic significance of paracolon strains seem probable. He found not only that the sphere of the paracolon strains touches the spheres of the colon group and of the typhoid and paratyphoid groups but also that they overlap. The paracolon strains have a considerable tendency to mutation; that is, their fixed virus is relatively small and the range of variation is relatively large. The author illustrates these conditions in a graph. He thinks that the paracolon strains are an important intermediate factor, for in cultural and biologic experiments he was able to show that paracolon strains may develop from ordinary colon strains and that in the course of this mutation they may assume "pathogenic" characteristics that impair the intestine. He believes that the mutation of the colon strains to paracolon strains is an important factor in the etiology of enteral disturbances not only after measles but also after other infectious disturbances.

Medizinische Klinik, Berlin

31: 1029-1060 (Aug. 9) 1935. Partial Index

Physiology and Pathology of Incretory Functions of Female Gonads. G. A. Wagner.—p. 1029.
Some Problems of Serotherapy of Diphtheria. F. von Bormann.—p. 1032.
Artificial Feeding of Nurslings. H. Beumer.—p. 1035.
*Behavior of Indole Content of Blood Following Indole Tolerance Test. O. Klein and P. Mahler.—p. 1043.
*Mucin Treatment of Peptic Ulcer. O. Wozasek.—p. 1046.

Indole Content of Blood.—Klein and Mahler studied the behavior of the indican content of the blood after oral or intravenous tolerance tests with indole in healthy persons and in persons with renal, hepatic and cardiac disturbances. The indican curves of the blood take a protracted course in renal sufficiency and, as a rule, ascend higher than in normal persons. The curve obtained in patients with hepatic disturbances indicates a retardation and a long duration of the increase. The peak of the increase usually appears much later in patients with renal disturbances than in normal persons: in normal persons it is usually reached two hours after the tolerance test, whereas in patients with renal disorders the maximum is not reached until from six to eight hours after the test. The highest value observed by the authors in patients with renal insufficiency was 3.5 mm. per hundred cubic centimeters. Following intravenous tolerance tests, similar deviations from the normal could be observed in cases with renal insufficiency, except that the course was more rapid and shorter. The indican concentration of the urine increases after tolerance tests in healthy persons as well as in patients with hepatic and renal disturbances. It may reach 0.42 per cent. In patients with renal insufficiency the capacity for the concentration of indole bodies is retained for a relatively long period. In this respect these patients differ hardly at all from the normal persons. The concentration capacity does not become impaired until severe degrees of renal insufficiency have been reached (preuremic stage); then, however, the concentration capacity decreases rapidly, for, even if large amounts of indole are administered, the indole concentration does not exceed 0.01 per cent. In regard to indole elimination, the renal insufficiency manifests itself not so much in a reduction of the concentration capacity but rather in an elevation of the renal threshold toward the specific elimination stimulus for indole substances. Renal as well as hepatic factors are involved in the behavior of the indican curve. In what manner the hepatic function exerts its influence is not clear as yet.

Mucin Treatment of Peptic Ulcer.—Wozasek resorted to mucin therapy in fifteen cases of duodenal and three cases of gastric ulcer. The cases were typical. The symptoms had persisted for two years or longer. The majority of the patients came to the hospital after dietetic and other forms of treatment had failed. Roentgenoscopy revealed an ulcer in all cases. The author did not begin with the mucin treatment until bed rest, milk diet and the administration of alkaline substances had failed to produce improvement, particularly freedom from pain. When the mucin treatment was begun, the patients were put on a soft diet and were given from three to five times daily (before the meals) one teaspoonful of mucin. All other medicinal treatments were discontinued during this time. As a rule, the symptoms improved after a few days. In about eight days the patients were free from pain and remained so even after the soft diet was replaced by a light mixed diet. In two neurotic patients who had had their symptoms for ten years the treatment was only partly successful in that the pressure pains disappeared but the hunger pains did not. In the majority of cases the mucin treatment was continued for from three to eight weeks. At the end of the treatment the acidity values were once more determined and compared with the initial values. There was no essential change, which indicates that the effect of the treatment is chiefly symptomatic, but as such the author considers it quite satisfactory.

Ugeskrift for Læger, Copenhagen

97: 793-814 (Aug. 1) 1935

Treatment of Acute Hemorrhagic Nephritis with Fever Diet. C. Schwensen.—p. 793.
*Arthritis Deformans of Hip Joint: Remarks on Disorder, with Especial Reference to New Method of Treatment. E. Jensen.—p. 794.
Acute Leukemia in Child Aged 2 Months: Case. A. Bertelsen.—p. 798.
Investigations Concerning Occurrence of Tuberculous Infection Among Pupils in School Class. K. Halberg and P. Helweg-Larsen.—p. 801.
*Application of Purified Diphtheria Vaccine (Anatoxin Ramon) with Addition of Aluminum Hydroxide. S. Schmidt.—p. 805.

Arthritis Deformans of Hip Joint.—Jensen considers the Camitz treatment, which is really the classic treatment of a spastic paraparesis, superior to methods of treatment previously used. The procedure requires a brief anesthesia and is thus applicable even to old and weak patients. The first of his five personal cases, in which operation was performed a year ago, continues without symptoms. The first of Camitz's thirty patients continues free from symptoms after ten years' observation.

Purified Diphtheria Vaccine with Addition of Aluminum Hydroxide.—Schmidt says that purified diphtheria vaccines diluted to the same titer (expressed in sedimentation units) are adsorbed in widely differing degrees by the same amount of aluminum hydroxide. On the whole there seems to be a certain dependence between the nitrogen content in a purified (salt-free) preparation and its ability to be adsorbed in aluminum hydroxide, but the adsorption relation may differ for vaccines with about the same nitrogen content. In one case a preparation was made adsorbable by preliminary treatment with aluminum hydroxide. Familiarity with the adsorption relation is important when complex antigens are to be produced, as the immunizing effect depends largely on the antigen depot introduced.

CORRECTION

Enophthalmos Instead of Exophthalmos.—In the seventh line of the abstract of Bielschowsky's article on "Influence of Exophthalmos on Paretic Ocular Muscles" in THE JOURNAL, August 10, page 462, the word "exophthalmos" should have been "enophthalmos."